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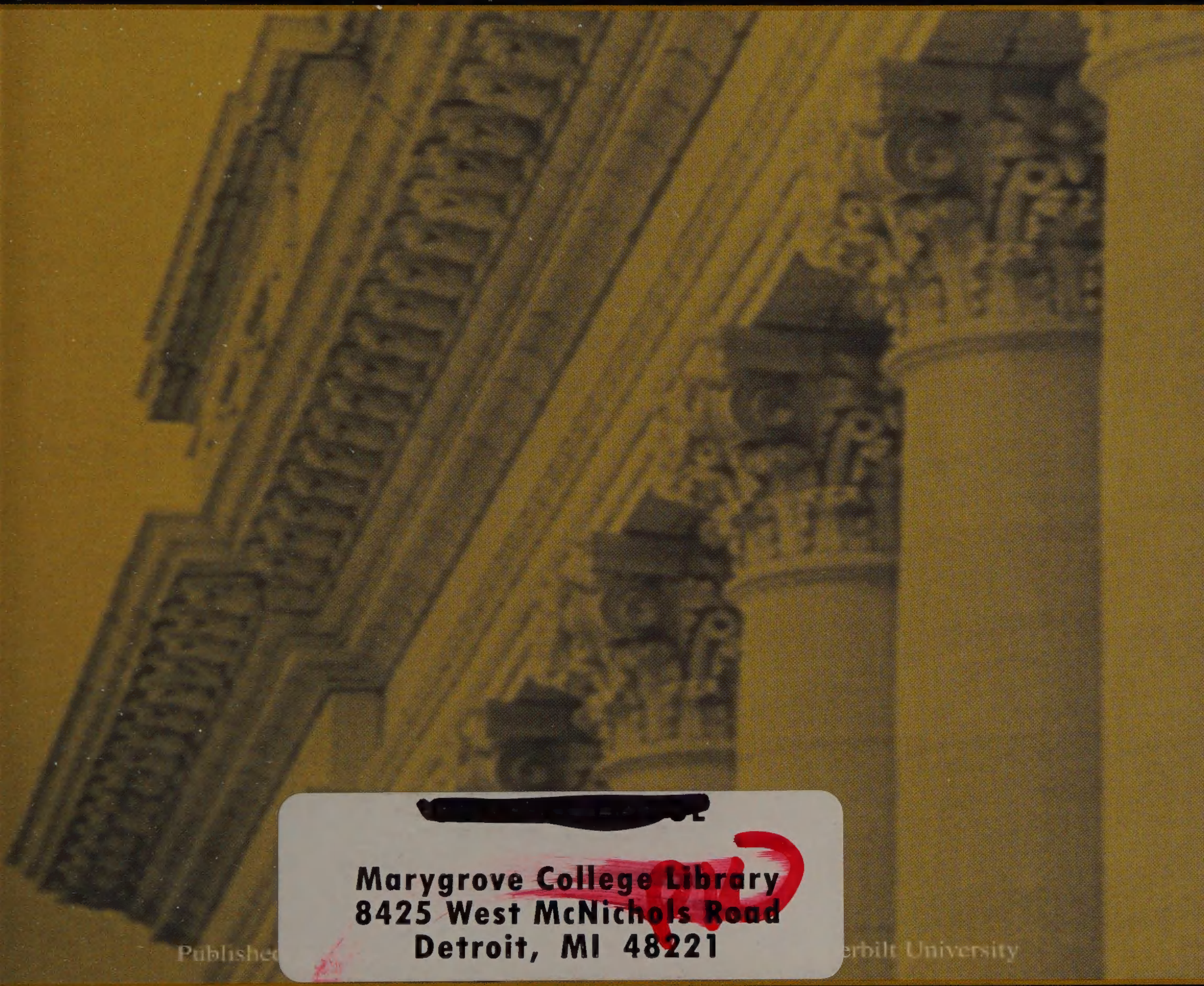

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Introduction to International Issues

Stephen P. Heyneman
Peabody College of Vanderbilt University

This issue presents issues in Comparative and International Education and represents the degree to which the field has been integrating with issues of domestic concern. Instead of focusing on exotic and isolated theories, the articles here demonstrate that issues of concern within OECD countries, including the United States, quite often have origins or equivalents elsewhere. For instance, the demand for teacher quality, particularly in math and science, is a significant issue in every American school district. The article by Kara Brown and Doyle Stevick, "The Globalizing Labor Market in Education: Teachers as Cultural Ambassadors or Agents of Institutional Isomorphism," discusses what happens when teachers are imported. They mention that a great deal of attention has been paid to the dangers of borrowing policy and insufficient attention to what happens when teachers adopt and disseminate practice at the local level. They portray what may become common, the existence of a "universal teacher," one with experience in multiple and divergent environments.

Domestic policymakers often worry about the nature of evidence in education. The trend has been to utilize randomized trials as a means to isolate and determine unambiguous effects. The use of randomized trials is also an issue in Eastern Africa. The article by Oketch et al., "When to Randomize: Lessons from Independent Impact Evaluation of Reading to Learn (RtL) Programmme to Improve Literacy and Numeracy in Kenya and Uganda," draws into question the use of randomized trials if the complexities of randomization outweigh its potential virtues, a lesson of broad importance.

Voucher schemes and gaps in achievement are also of high importance, in the United States and elsewhere. The article by Jonathan Stern, "The 'Developing' Achievement Gap: Columbian Voucher Reform," suggests that the income-contingent vouchers used to overcome achievement gaps from an "underfunded, inefficient and/or inadequately supplied public school sector" have been genuinely helpful and, with proper improvements, should be expanded.

How to employ cognitive neuroscience in education has long been a priority within American schools of education. The article by Helen Abadzi, "How to Improve Schooling Outcomes in Low-Income Countries? The Challenge and Hopes of Cognitive Neuroscience," informs us that using cognitive neuroscience may be even more useful in developing countries. She points out that learning outcomes are very low in part because curriculum often overstates student ability to "learn complex methods with scant practice." She includes perceptual learning for scripts,

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Correspondence should be sent to Stephen P. Heyneman, Vanderbilt University, Peabody Box 514, 230 Appleton Place, Nashville, TN 37203. E-mail: s.heyneman@vanderbilt.edu

automaticity for basic skills, the limitations of working memory, and the formation of cognitive networks in long-term memory as being among the applicable concepts.

Student cheating and plagiarism continue to be problems in the United States. These problems in some ways mirror how corruption may play out elsewhere. Two articles address themselves to this set of issues. In her article, “Acting and Reacting: Youth’s Behavior in Corrupt Educational Settings,” Amra Sabic-El-Rayess explores the ability of students to cope with exposure to educational corruption and the degree to which their private norms can hold sway against what appear to be the norms of their peers. Taking her sample from the higher education systems in Bosnia and Herzegovina, she employs theories of organizational “voice, exit and loyalty” to better understand how students react to the “failing organizations” educating them. In the second article on education corruption by Boehm and Caprio, “Fostering Good Governance at the School Level in Honduras: The Role of Transparency Bulletin Boards,” the authors describe the rather significant effect of a “homegrown response” to increase transparency and improve governance.

Then there is the popular question as to how learning outcomes compare across countries and whether previous comparisons have been adequate. The article by Jeongwoo Lee, “An Attempt to Reinterpret Student Learning Outcomes: A Cross-National Comparative Study,” argues that previous attempts have treated rankings on core subjects such as reading, math, and science as though they were the equivalent of educational outcomes. His article compares scores across subjects, including civics education, to explore both cognitive achievement and civic knowledge achievement. It also has assessed outputs in accordance with the inputs of expenditures and learning time. His discussion of these new factors suggests that it might be wise to reevaluate the country rankings and reinterpret student performances, taking educational efficiency into consideration.

It is often claimed that “the world is becoming smaller”; communications are faster, international travel is more common and for both economic and political purposes, and immigration is now commonplace. However, few have studied what effect such mobility might have. This is the subject of the article by Laura Engel, Leslie Rutkowski, and David Rutkowski. They draw on the data collected in the study sponsored by the International Association for the Evaluation of Education Achievement on Civics Education and find that international mobility may exacerbate societal inequalities but that schools may have an important impact on modifying these adverse consequences.

Last, it is sometimes suggested that when those who are educated are also unemployed, the likelihood for political protest participation increases. Protests have become a worldwide phenomenon (Occupy Wall Street, Arab Spring, Chilean Winter). This study considers the relationship between education and protest participation. In the article “Are Student Protests in Arab States Caused by Economic and Political Grievances? Empirical Evidence from the 2006–07 Arab Barometer,” Najeeb Shafiq et al. find that protests in Algeria, Morocco, and Yemen, but not in Jordan, are related to their grievances concerning the economy, family poverty, political exclusion, and lack of democracy.

In each of these articles the relevance of Comparative and International Education is reiterated to both those interested in local policy reform and those interested in school policy reform internationally.

AUTHOR BIO

Stephen P. Heyneman received his PhD in comparative education from the University of Chicago in 1976. He served the World Bank for 22 years. Between 1976 and 1984 he helped research education quality and design policies to support educational effectiveness. Between 1984 and 1989 he was in charge of external training for senior officials world wide in education policy. And between 1989 and 1998, he was responsible for education policy and lending strategy, first for the Middle East and North Africa and later for the 27 countries of Europe and Central Asia. In July, 2000 he was appointed professor of International Education Policy at Vanderbilt University. Current interests include the effect of higher education on social cohesion, the international trade in education services and the economic and social cost to higher education corruption.

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The Globalizing Labor Market in Education: Teachers as Cultural Ambassadors or Agents of Institutional Isomorphism?

Kara D. Brown and Doyle Stevick
University of South Carolina

Institutional isomorphists and other proponents of world culture theory argue that schools around the world are converging in many ways, whereas anthropologists and others question this conclusion, often arguing that local cultural differences belie superficial similarities. These viewpoints are not merely academic explanations of the spread and apparent convergence of education policies and practices around the world but are often present in policy and practice. The authors seek both to shed new light on these often-entrenched positions and to refocus the debate by considering the presence and influence of such views in the policies and practices of international teacher exchanges. In the context of the expanding global labor market for teachers, the authors consider the implicit theories underpinning international exchange policies and the ways in which the exchange teachers themselves make sense of these policies.

In particular, we recognize that although extensive work has been done on the dynamics of policy borrowing, little attention has been paid to international exchange teachers as potential agents of isomorphism, adopting and disseminating practices at the local level. Paradoxically, the exchange policies construct a universal teacher who is interchangeable across national (and cultural) contexts, a view resonant with institutional isomorphists, while justifying the exchanges rhetorically on the basis of their value as a cultural exchange, a view more consistent with the culturalists. The teachers who participate, however—and who effectively self-select by their beliefs that such exchanges are possible—accept the interchangeability thesis and view such exchanges as a professional development opportunity.

The globalization of labor markets, well-established in nursing (Ross, Polsky, & Sochalski, 2005), many technology-intensive professions, and higher education (Musselin, 2004), has expanded rapidly in American schools. Although overseas-trained teachers (OTTs) have worked in "foreign" contexts for decades (see, e.g., Abir, 1970, on the recruitment of Indian teachers to Ethiopia), the United States now joins countries ranging from the United Kingdom (Commonwealth Secretariat, 2004) to Botswana (Appleton, Sives, & Morgan, 2006) in looking abroad for teachers to address critical shortages. Over the last 15 years, a wide array of public and private agencies—including the U.S. Department of State, state departments of education, local school districts, and nonprofit

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Correspondence should be sent to Kara D. Brown, Kalevi 9, korter 22, tartu, Estonia, 51010. E-mail: brownk25@mailbox.sc.edu

and for-profit teacher recruitment companies—have sought international teacher exchanges in order to address persistent and growing teacher shortages. Although K-12 schools across the United States employ OTTs, concentrations can be found in California, major urban centers (e.g., New York City, Washington, DC, Baltimore) and in the Southeast.

The emerging globalization of the labor market for teachers has profound theoretical and practical significance. Theoretically, the practice of exchanging teachers across national contexts can shed new light on calcifying debates between world culture theorists (or institutional isomorphists, as they are sometimes called) and their critics. Practically speaking, educators and policymakers must deal with ethical concerns (e.g., the risk of brain drain) and cultural challenges (what kinds of special preparation are required for teachers to function effectively cross-culturally?).

Research on OTTs is in its infancy. The valuable studies that do exist (examples include Barber, 2003; Dunn, 2011, 2013; Miller, Mulvaney, & Ochs, 2007) come from a variety of methodological and conceptual approaches. Basic data regarding international teacher exchange policies and practices, including the distribution of teachers, their specializations, and countries of origin, are lacking. In addition, we know little about the merits and problems of these exchanges and less about the experiences of teachers in them. In this article, we seek to address these deficits by reporting on the first two phases of a long-term research project on the policy and practice of international teacher exchanges in the U.S. state of South Carolina.

We first consider the practice of international teacher exchanges in relation to the broader debates between those who believe that schools around the world are converging in form, organization, and practice (the world culture theory or institutional isomorphist position) and critics who argue that the appearance of convergence stem from superficial similarities that disguise education's fundamentally cultural, situated and contextual character. We then outline the broader project's research design and methods. The first phase of the project shared here includes a descriptive study of the demographics of teacher exchanges in South Carolina and an analysis of the forces that led to its widespread adoption in the state. The second phase shifts the focus to understanding the experiences of OTTs who participated in the program. A discussion concludes the article.

THEORETICAL FRAMEWORK

"Institutional isomorphism," the theory of global convergence in education, implies that universally applicable best practices can be identified and that teachers are interchangeable across national contexts (Meyer, Boli, Thomas, & Ramirez, 1997). The contrasting cultural model, rooted in anthropological perspectives, asserts that similar structures and practices nevertheless have different meanings in different contexts, implying that education policy and teacher preparation require a great deal of local knowledge and cultural awareness to be effective (Anderson-Levitt, 2003).

For decades, researchers in comparative education have explored the cultural dimensions of teaching (Alexander, 2001; Anderson-Levitt, 2002; Shimahara & Sakai, 1995; Stigler & Hiebert, 1999). Broad agreement exists in the field that teaching is a deeply cultural practice and is tightly intertwined with broader societal philosophies and beliefs. Stigler and Hiebert (1999) argued that "systems of teaching, because they are cultural, must be understood in relation to the cultural beliefs and assumptions that surround them" (p. 88). The cultural dimension of teaching and school practice, however, is often an implicit, taken-for-granted, and invisible aspect of the profession that many teachers and others may not recognize in their original contexts.

As Florio-Ruane (2002) noted, however, teachers are key actors in a "complex ecology" that involves "the nature of knowledge, the child's growth and development, many ways of behaving and making sense among diverse citizenry, and the unequal distribution of wealth and power" (pp. xi–xii). In an era dominated by the nation-state, in which the borders of culture, language, country, and education policy closely align, researchers have examined the cultural knowledge needed to teach in countries like France (Anderson-Levitt, 2002), Russia (Alexander, 2001), and Japan (Shimahara & Sakai, 1995). According to anthropologists, the deep cultural roots of teaching and schooling lead to local variation of teaching and schooling and widely differing teacher practices (Anderson-Levitt, 2003).

Given the cultural aspects of teaching, global teacher migration suggests a possible cultural displacement as teachers move away from their home countries, schooling, training, certification, and professional experiences and work in foreign contexts. Although this adjustment may be complicated, some comparative education scholars argue that a world culture has emerged in which the structures, curricula, and goals of schools have converged (Baker & LeTendre, 2005; LeTendre, Baker, Akiba, Goesling, & Wiseman, 2001; Meyer et al., 1997); this convergence diminishes country-to-country differences in practice, and would therefore facilitate OTT practice in a new national context. Recent, cross-national research in teacher education on teacher preparation for secondary mathematics, for example, found a degree of homogeneity in curricular content (Blomeke, 2012). Even critics of institutional isomorphism acknowledge that "educational systems, processes and values to appear to be coinciding" (Carney, Rappleye, & Silova, 2012, p. 387). Beyond similarities in content, world culture theorists underscore the "global cultural dynamics to draw attention to the fact that national systems of education around the world are affected by a dominant global culture that has a specific content (i.e., values of rationalization, bureaucracy, individualization, democratic governance)" (LeTendre, Baker, Akiba, Goesling, & Wiseman, 2002, p. 22).

METHODOLOGY

The research drawn on for this article is part of a multiyear, multisite project that began in 2009 and will run through 2013. In the first phase of the project (2009–2012), we examined institutionalized moments of the OTT exchange process: recruitment, selection, induction, and the creation of "successful" OTTs. We conducted 22 semistructured and open-ended interviews with state department of education officials, representatives from OTT broker companies, and South Carolina school administrators in 2009, 2010, and 2011. A key purpose of the first phase of data collection was to understand the scope of the use of J-1 teachers at the state level. Due in part to the decentralized nature of education in the United States, a national database of international teachers is not available. Although we have a sense of the number of OTTs working in the United States as a whole, around 20,000 in 2009 (American Federation of Teachers, 2009), select state-based compilations are generally unavailable (for an exception, see Bartlett, 2009, on California). To grasp the scope of J-1 teacher placement and global migration flows, we analyzed more than 1,000 international teacher files from the SC teacher certification database. We charted and mapped the data using Geographic Information Systems with the assistance of geography colleagues. In our analysis, we incorporated information from 2006, the year the South Carolina

Department of Education (SCDE) began to identify the host J-1 program for each teacher, through 2009. We are currently in the process of collecting and mapping the next set of data (2010–2013). In this article, we share our findings from the 2006–2009 years with the recognition that there has been a decline in the number of OTT working in the state. The systematic review and use of Geographic Information Systems pointed to the scope of the use of these teachers and included their profile (e.g., years of experience, country of origin, degrees), geographic concentration in the state, academic fields, and the general trends in migration and placement.

The interview data we analyze in this article comes from the second phase of the project (2012–2013), in which we attempt to understand this policy process from the OTTs' perspective. Involving teachers at all phases of the process—recent recruits, active hires, and returnees/homecomers—we began the teacher interviews with the returnees in order to gain a holistic understanding of their J-1 process. Given the long and particular relationship that South Carolina has had with Romanian teachers (in part due to an SC teacher-broker company that works primarily with Romanian teachers, which results in Romania being the third largest OTT sending country to South Carolina), as well as one of the researcher's expertise in Romania, we chose Romanian returnee teachers for the first round of interviews. Focus on teachers from one country reveals a longitudinal view on educational development and change within the sending country. In the spring of 2013, the researchers will conduct similar interviews in India (the primary OTT sending country to South Carolina).

Our analysis of teacher certification files revealed that the majority of Romanian OTTs came from one city—Cluj Napoca. Based on this information and the connections established through Phase 1 interviews, Stevick traveled to Romania and conducted 14 semistructured interviews lasting approximately 2 hr each with returnee Romanian OTTs who had worked in South Carolina. For the purposes of this article, we selected two cases to illuminate broader trends found across the group. We gave these two OTT returnees pseudonyms: Victor and Christina.

THE BROAD ADOPTION OF INTERNATIONAL TEACHER EXCHANGES IN SOUTH CAROLINA

South Carolina's broad involvement with international teacher exchanges began only once federal policies enabled them. The most important federal policy for enabling such exchanges has been the J-1 visa program. South Carolina has hosted more than 2,000 OTTs on 3-year J-1 exchange visas since 1998. In purpose, the J-1 program is cultural; professionals work on a temporary (up to 3 years, now extendable for 1 year) basis for the purpose of cultural exchange. According to the U.S. Department of State (n.d.), the goal of the Exchange Visitor Program is to "promote mutual understanding between the people of the United States and the people of other countries through educational and cultural exchanges." Likewise, the SCDE presents a cultural rationale for developing Memoranda of Understanding (MOUs) with other countries to foster teacher exchange: "These MOUs have been established as a means of broadening cultural understanding, fostering the exchange of educational ideas and techniques, and introducing teachers from other countries into the classrooms and communities in South Carolina" (SCDE, n.d.). In their rhetoric, the emphasis upon culture aligns well with the anthropological critics of world culture theory.

The philosophical underpinnings for the J-1 visa for teacher applicants seem directly contradictory to those undergirding its eligibility requirements. Indeed, the rationale aligns closely with the anthropological critics of institutional isomorphism, whereas the criteria for the visa could have been derived from world culture theory. Together, they reveal the paradoxical ways in which the U.S. government, districts, and schools invoke the cultural differences that international teachers bring while operating on a premise of universal preparation and expertise that make teachers effectively interchangeable across national borders. The eligibility requirements for the J-1, also called the Exchange Visitor Program, include 3 years of teaching experience (in their home country or elsewhere), certification (in their home country), and English proficiency (though this is less important for language immersion teachers). The regulations frame experience, training, and certification as functionally equivalent, despite cross-national differences in these three professional domains.

The U.S. Department of State oversees the process by approving sponsors to manage the recruitment and placement of OTTs. In South Carolina, the SCDE and four private, for-profit "teacher broker" firms—Visiting International Faculty, Foreign Academic & Cultural Exchange Services (FACES), the Amity Institute, and International Teacher Exchange Services—handle the majority of the international placements. The SCDE, which organizes teacher exchange programs based on bilateral, Memorandum of Understanding agreements, has established links with five countries—India, France, Spain, China, and Taiwan. The financial dynamics of the J-1 arrangement differ significantly based on the sponsor. With public agencies like the SCDE, teachers and their SC host school/district pay neither recruitment nor placement fees. Private companies, however, generally charge teachers or their host schools/districts either a one-time placement or an annual fee. Sponsor organizations typically coordinate orientation and in-service training for the J-1 teachers in their program in addition to any programs offered by the host school or district.

Although a number of circumstances made SC particularly receptive to the policy—including its lack of an effective teacher union—four primary developments in education fed SC's demand for the global recruitment of teachers. First, by passing the No Child Left Behind Act of 2001, the federal government increased pressure on school administrators to hire highly qualified teachers. Former SC State Superintendent of Education Jim Rex drew attention to the relationship between the unmet needs of SC public schools and the recruitment of OTTs:

> We are getting dangerously close in some parts of our state to having a demoralized and compromised teaching force. ... In many areas of our state, over the last seven or eight years, we have been increasingly hiring foreign teachers, teachers from other countries, India, Romania, and elsewhere because we cannot find U.S. citizens and South Carolinians certified to teach in those areas. (University of South Carolina, Witten Lecture, 1 October 2007)

Indeed, many schools found that it was easier to certify international teachers as highly qualified than it was to find domestic teachers who met the criteria.

Second, a persistent teacher shortage existed in many pockets of the country, particularly afflicting the most high-needs schools in rural and urban areas. The use of international teachers, what the National Education Association once claimed to be "a temporary solution to a long-term problem," has transformed into a sustained approach to address widespread teacher shortages. Accordingly, the SCDE advocates the recruitment of international teachers as one method of bringing highly qualified teachers to meet "critical needs in hard-to-staff geographical and subject areas" (SCDE, 2006, 17). The same slate of hard-to-staff subjects—special education, math, science, foreign language, and English as a Second Language—is found in states like South

Carolina, Georgia (Dunn, 2011, 2013), California (Bartlett, 2009), and Arizona (Terrazas & Fix, 2009).

The third factor leading to the increased use of international teachers emerges from the heightened national concern to develop a globally competent citizenry and workforce. Both the federal and state departments of education assert that temporary teacher exchanges help to internationalize public education by bringing the "world to schools." The U.S. Department of Education explicitly voiced its commitment to the use of international teacher exchange programs as a way to complement this 21st-century priority of the federal government (Paige, 2003). Superintendent Rex, upon signing a teacher exchange agreement with France, echoed the U.S. Department of Education's position on the use of international teachers: "I believe that the cultural focus for the exchange of ideas will go a long way toward ensuring that our young people are able to compete successfully both here and around the globe" (SCDE, 2007). Similarly, the SCDE's (n.d.) description of the International Visiting Teachers Program frames the use of OTTs as an opportunity for global enrichment: "School districts throughout the state have an opportunity to provide students with programs that are linguistically and culturally rich to better prepare them for future success in their personal, academic, and professional lives."

Fourth, education faces difficult budgetary pressures, and the financing of international teachers is often cheaper than domestic teachers. South Carolina revenues plummeted with the economic crisis, yet Governor Sanford attempted to reject federal stimulus money to keep teachers employed (he was eventually forced to accept it). Despite this order, hundreds of teachers lost their jobs. International teachers offer an efficient means of hiring. As districts have to pay significant sums beyond salaries toward domestic teachers' insurance and retirement, which don't have to be provided for international teachers, they can provide the same salary, pay (in some cases) $10,000 to an agency, and still cut costs.

Together, these developments have led to an increasing number of OTTs currently teaching in South Carolina's public schools. In the 2011/2012 schools year, 265 OTTs worked in the state (down dramatically from 768 in 2008/2009). Although the trend to hire international teachers, especially to fill critical vacancies, began in South Carolina in the late 1990s, the percentage of these teachers hired grew exponentially from 2000 until 2008, with a decline starting in the 2009/2010 academic year due to the recession and budget cuts. The SC Teacher Salary Schedule Revision Task Force (2006) observed that the number of OTTs hired in South Carolina increased by a factor of 10 from 2003 to 2005 (p. 55).

J-1 OTTs come to South Carolina from 39 different countries with India, the Philippines, Romania, Colombia, and Jamaica representing the primary "sender" countries. The international teachers working in South Carolina in 2008/2009 tended to follow a South–North migration pattern; that is, they hail primarily from countries located south of the equator, like India. Romania, an east European sending country, proves to be an exception to this trend. In addition to being developing countries in the South, three of the five the biggest "sender" countries for South Carolina—India, Philippines, and Jamaica—also recognize English as an official language. Teachers recruited from these countries are accustomed to using English as their professional language. The OTTs' professional English ability is a key factor in facilitating their global migration to a new teaching context.

In South Carolina, as in other states, teacher recruitment and retention are toughest in "hard-to-staff" poor, predominantly minority school districts. In SC, the coastal south, the southern corner of the state, and the I-95 corridor remain stubbornly difficult regions to staff. Teacher turnover rates for 2011 in various school districts reflect these challenges: 37.7% in Bamberg 2, 36.4% in Lee, and 22% in Florence 4. J-1 educators teach in schools across the state of South Carolina (in 51 of the state's 81 school districts), but in many cases, the lowest performing school districts turned to foreign teachers to fill their teaching shortages and recruit "highly qualified" teachers. Richland 1 and Williamsburg 1 hosted the greatest percentage of J-1 teachers—17%—in 2008/2009. Although the relative proportions of J-1 teachers to district and school sizes are currently being determined, some evidence points to a concentration of J-1 teachers as new and renewed hires in particular districts and schools. For example, in Ridgeland Middle School in Jasper County, the percentage of foreign teachers constituted as much as one third of the faculty ("Program," 2004). Finally, a geographic pattern has emerged between certain host districts and sender countries. Six districts only employ teachers from India (i.e., Williamsburg 1, Marion 2, Beaufort, Marlboro 1, Lee 1, and Allendale 1). Other districts tend to draw largely from the same regions. For example, Richland 1 hosted J-1 teachers from India and Colombia (65 out of 85).

OTT in South Carolina overwhelmingly teach hard-to-staff subjects—particularly secondary mathematics, science, foreign language, and special education. In 2008–2009, the greatest percentage of J-1 teachers (31%) taught special education, with math (24%) representing the second most-commonly taught subject. The Williamsburg School District alone had 46 teachers from India working in special education, math, and science. Data from the state certification files suggest that districts differently access the J-1 teacher market with the wealth of the district, as measured in part by free and reduced-price lunch rates, playing a role. For example, in Greenville 1, the ninth wealthiest district in the state, more than 80% of the district's J-1 educators taught a foreign language. In Williamsburg 1, the second poorest district in the state, 58% of the J-1s taught special education and 23% taught math. These district-based J-1 profiles point to a differing demand across the state with wealthier districts seeking primarily foreign-language J-1 teachers and high-poverty, lower achieving districts hosting J-1s certified in math, science, and special education.

Finally, data reveal that in 2008–2009, J-1 teachers had an average of 9.5 years of experience, 80% were recognized as "highly qualified," more than 40% of the J-1 teachers had a master's degree or beyond, and 11% of the J-1 teachers returned to South Carolina for a "second tour" in the program. In practice, a second tour means that a J-1 teacher completed the first 3 years on the visa, returned home for the required period, then re-enrolled in the J-1 program. The greatest number of these returnee teachers come from India ($n = 32$), Romania ($n = 19$), and Colombia ($n = 10$) and typically return to their original host schools. Thirty-four percent of these J-1 educators teach special education and 22% teach a foreign language. The returnee rate among current J-1 teachers points not only to the sustained need of certain schools within specific subject areas and to the possibility of long-term international relationships developing within the restrictions of a short-term visa program but also the consistent interest among certain OTTs to take their skills global.

AGENTS OF CONVERGENCE?

Several key findings emerged from our analysis of the Romanian returnee OTT interviews that contribute to the dialogue between the world culture theorists and those who advocate for a more prominent role for culture. In this section we share data that attest to the reasons and the ways returnee teachers function as key actors who carry and disseminate pedagogical practices across borders. Broadly speaking, the interviews illustrated the ways these OTTs define themselves as highly competent professionals, who could work seamlessly in a new national context, but still learned new approaches and techniques within their subject area to be applied "at home." This strong sense of professional identity allowed the OTTs to frame their experiences teaching in South Carolina as professional development.

In this following section, we explore Victor and Christina's reflections on lessons learned about (a) student–teacher relationships, (b) discipline and classroom management, and (c) pedagogy during their OTT experiences. We then consider the teachers' identification of places where exchange of these "lessons learned" unfolds: in faculty meetings and the classroom. In discussing both the lessons learned and the moments of dissemination, we were attentive to the cultural explanations the teachers provided for their adoption and advocacy of certain strategies observed in the United States. Teachers, as is clear next, are active cultural agents observing, experimenting, and selectively taking up new things.

Victor is a high school math teacher with 39 years of experience. He has taught in multiple sites outside his home country—in France (1993) on a government-exchange program and in South Carolina (1996 and 1997) through the FACES program.[1] Victor returned to teach in an elite Romanian high school in Cluj. Christina is an elementary school teacher with 11 years of experience. She taught special education in a South Carolina middle school through the FACES program (2001–2003). Christina returned to Romania in 2003 to pursue her doctorate in special education.

Student–Teacher Relationships

Returnee Romanian OTTs were struck by the different nature of student–teacher relationships in the United States as compared with those in their home country. Teachers like Victor and Christina observed the ways teachers in the United States had more "horizontal" than "vertical" relationships with students and parents. Teachers in the United States were no longer central authority figures but were expected to develop reciprocal relationships with students.

> It's a European style. The teacher is the magister and the teacher is still the most important person in the learning process . . . in France, which is similar to Romania, but a bit more open. In the United States, it is different. The teacher was more close to the students, employed and paid by the budget to teach the students. The relationship was more, more tight and you felt like you were directly responsible for this and this and this student. And, when you had the meet with the parent, the principal and the teacher, we discussed like partners not like magister and student.—Victor, March 2012

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[1] In our research, we have encountered teachers who rotate between countries, as many teachers in international schools are known to do. The phenomenon we have come to call "teacher nomads" describes teachers who teach primarily domestic children in the (usually) public schools or (sometimes) private schools of countries around the world. They may return to their home country to work infrequently. Victor did not meet this threshold, as he maintained his permanent residence in his home country and went abroad for two stints of just a few years before returning home for extended periods. Teachers in international schools do not generally meet this threshold either, as they are not adapting as extensively to domestic educational practices and cultures.

Victor's attention to broad continental (i.e., "European") style of the teacher's role and to regional similarities and differences reveals the way he triangulates (across French, Romanian, and U.S. contexts) rather than dichotomizes difference. Also, he was attentive to the nature of the discourse and interaction among himself, the parent, and the principal, who engaged "like partners." Victor's observation of the prevalence of the "partnership" in U.S. schools echoes in anthropological research that points to this cultural construction as a dominant model and paradigm for parental involvement in schools (Doucet, 2011; Lopez, 2001).

Christina also began to appreciate new, transformed roles for herself as a teacher resulting from her South Carolina experiences.

> In Romania, we have this competition between the students and I didn't see it very well when I left Romania. But, in the U.S., I began to understand that this competition is with the student first. The student has to be content with himself or herself; it has to be better than yesterday. So, when I came back [from the U.S.], I said to the students, "You can do more than that. It doesn't matter what the others do. You have to do better than yesterday" and they understood this.—Christina, March 2012

In highlighting the value of the comparative teaching experience—"I didn't see it very well when I left Romania"—she explains the way she observes everyday Romanian student competition in a new way. As a returnee teacher in Romania, Christina now positions herself as a teacher who encourages the students to do their individual best. Of importance, students are receptive to this advice—"they understood this"—and her new teacher practice.

Discipline and Classroom Management

Romanian returnee OTTs repeatedly noted that their U.S. experiences exposed them to new notions of discipline and classroom management. Teachers framed classroom management as a culturally neutral practice that may be present in one context but not perceived as culture or context specific—it can be picked up and brought back ("This is practical and it works").

> From my U.S. experience, I learned a very important thing—how to manage the classroom ... classroom management. This is very well developed in the U.S. and I have learned a lot about this and have applied it in Romania. And, now, at the present, I am working with things that were not necessary several years ago in Romania, but are now. We need these things; they are necessary. Classroom management, rules, discipline, consequences. And, I have my own rules in my classroom, the students know the consequences, sign a contract. And, I'm working like I did in the U.S. ten years ago. This is practical and it works.— Victor, March 2012

Victor's temporal focus on the arc of educational development in Romania vis-à-vis the United States ("I am working with things that were not necessary several years ago in Romania" and "I'm working like I did in the U.S. ten years ago") points to the emergent moments of convergence in practice; only as a result of shifts in educational norms and values in Romania has Victor had to tap into his reservoir of strategies learned while working in the United States.

Pedagogy

Romanian returnee OTTs developed new insights into pedagogy as a result of their experiences. Teachers pointed to the differences in pedagogical approach and curriculum in the United States. In some instances, teachers voiced frustration that one nation's norms and school standards created barriers to borrowing and adapting. Victor mentioned that although he appreciated giving students the opportunity to use calculators in U.S. math classes, this practice was forbidden in Romania. In other cases, examples of pedagogical convergence were highlighted.

> In France and in the United States, [in math class] there are a lot of applications in real life compared to Romania. Here [in Romania] math is more abstract, there is more theory and fewer practical problems to show students why they need to learn mathematics and where they can apply it. . . . The necessity of learning something—why should I learn, let's say, functions. There were examples taken from reality, then, they define the notion, and go back and apply. Now, in Romania, we also started to connect mathematics more to lived reality than before, but still we need to do more about this.—Victor, March 2012

Victor's comment points to the logic he finds in this shift ("we need to do more of this") and the perception of convergence. He also identifies a national "we" charged with continuing this reform, though teachers endorse general shifts in subject-specific pedagogy.

Other teachers pointed to the difference in teacher-preparation curriculum and the active role they assumed in transforming their practice based on U.S.-based learning.

> Here, after we finish the university, we don't have some courses to help us with individual education plans, accommodations, modifications of the curriculum. This is a big issue here in Romania, so it helped me a lot to have this. When I came back to Romania, I followed what I learned in the U.S. I applied the information in my classes.—Christina, March 2012

In this quote, Christina frames the lack of special education teacher training components typical in the United States as a "big issue" in Romania. As with Victor in his previous quote about bringing classroom-management strategies from the United States to Romania, Christina also actively transfers, assumingly without problem, the approaches that are helpful to her to "home" context.

Finally, the Romanian returnee OTTs noted key places and moments when they exchanged ideas with their colleagues and students. In their reflections, they noted the spaces and places of pedagogical transfer. Several teachers mentioned sharing "lessons learned from teaching in the U.S." in faculty meetings. They recalled that upon their return from the United States (and France), colleagues expressed tremendous interest in their experiences and the nature of U.S. schooling. With students, teachers strategically deployed cultural sharing at particular times for pedagogical ends (e.g., for reward):

> [The students] asked me a lot of times about my life before the fall of communism and we discussed a lot about this. . . . We had some moments to discuss not during class time and I gave this as a reward. I told them, "If you are doing your work, on Friday in the last ten minutes we can discuss [this], you can ask me questions." And, they did. They asked me about school in Romania, about my life. This happened in France and America.—Victor, March 2012

Victor's strategy of "culture exchange upon performance" echoes those shared with us by other OTTs from Kenya and Russia. These pedagogical moments reveal not only the common (and persistent) student interest in learning about global culture but also the ways OTTs use cultural difference as an incentive, a tool, and a reward in the school setting.

DISCUSSION AND CONCLUSION

The research reported in this article focuses on the rapid globalization of the teaching force of South Carolina and, more broadly, the United States. Since 1998, approximately 2,000 international teachers have taught in the state's public schools. The majority of these J-1 teachers, who come to South Carolina largely from developing countries in the global South, are placed in high-need schools and teach hard-to-staff subjects like math, science, special education, and foreign languages. According to certification data, the globalization of the teacher market has led, in part, to a flow of credentialed and experienced teachers to many of South Carolina's most needy public schools.

Despite their overwhelming placement in "hard-to-staff" schools, the Romanian returnee OTTs profiled in this article presented their experiences in U.S. schools as opportunities for professional development rather than experiences that were challenging due to cultural differences. The teachers' confidence and pride in their professionalism allowed for a permeability of state and cultural boundaries. Victor and Christina communicated their understanding that many teaching strategies were applicable and appropriate to any classroom, not just those in the United States. Moreover, their time teaching in the United States was one that improved their professional repertoires. Thus, the returnee teachers perceived a certain universality to curriculum, pedagogy, and teacher practice, in general. These teacher understandings reflect an understanding of global homogeneity and serve to converge teacher practice.

The data also suggest a distinct direction to the exchange and transfer around pedagogical strategies—the global transfer was largely unidirectional. As the interview data illustrate, Romanian returnee OTTs borrowed techniques and strategies from the United States but were not positioned or pursued in U.S. schools as teachers who could help transform teacher practice in South Carolina. None of the teachers reported schools capitalizing on their presence to learn about pedagogy and curriculum in Romania. In a time when a great deal of educational literature explores what can be learned from international contexts to improve teacher training, quality, and practice (Akiba & LeTendre, 2009; Darling-Hammond & Lieberman, 2012), the "unidirectional transfer" is an everyday, missed opportunity for U.S. schools to learn from foreign professionals.

Finally, returnee Romanian OTTs engage in social practices that produce new meanings of space, territory, and boundaries around teaching. Qualitative research helps us to understand their rationales and understandings of professionalism, universal subject matter, and appropriate pedagogy (or teacher training). These teachers help to create and support notions of the universal math or special education teacher and work as teachers who contribute to global convergence through the refining of practice in their home country.

These conclusions are limited, of course, to one country-specific group of returnee OTTs. The perspectives are valuable in providing us with a window into the ways that one cultural group positions itself in a global system of teacher exchange. How might the insights of Romanian teachers at different stages in the exchange process (i.e., recent recruits or in-service teachers) differ from those shared by returnees? Will the perspectives of OTTs from India align with those from Romania? How do we explain the ways these teachers make sense of their J-1 experiences?

Are those explanations themselves deeply rooted in national culture and history or will we find the emergence of a universal teacher? We expect that these questions will begin to be addressed as we and others continue research on this topic.

AUTHOR BIOS

Kara D. Brown is an Associate Professor of Educational Studies at the University of South Carolina. She researches educational equity and identity issues connected with schooling. Brown explores these themes through examinations of the socio-cultural context of language, the state's role in structuring educational opportunity, and international teacher migration. Much of her research focuses on Central and Eastern Europe with particular emphasis on Estonia.

Doyle Stevick is associate professor of Educational Leadership and Policies at the University of South Carolina, where he is director of the Office of International and Comparative Education. A Fulbright Fellow in Estonia for 2013–14 and Visiting Professor at Tartu University, Stevick researches the relationship of education and democratization. His books include Reimagining Civic Education and Advancing Democracy through Education, both with Bradley Levinson. He also works extensively in Holocaust education.

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When to Randomize: Lessons From Independent Impact Evaluation of Reading to Learn (RtL) Programme to Improve Literacy and Numeracy in Kenya and Uganda

Moses Oketch
Institute of Education, University of London

Moses Ngware, Maurice Mutisya, Admassu Kassahun, Benta Abuya, and Peter Musyoka
African Population and Health Research Center (APHRC)

In East Africa, there is great effort directed toward ensuring that there is learning and value for money invested in universal education policies initiated over the past decade. Kenya and Uganda are two countries that typify this effort. The effort includes the work of research organisations such as Uwezo, which assess learning levels; RTI, which assesses language and early grade reading; and the work of African Population and Health Research Center (APHRC), which looks at schooling patterns of different households. All these studies paint a disappointing picture both for the universal access Education for All policy and the large sums of money that have been devoted to achieve it. The verdict is that too many pupils in schools are not learning and too many poor ones are excluded from universal public access. Uwezo reports that 70% of pupils in Grade 3 cannot do Grade 2 work, and 9% of those completing Primary 8 in Kenya cannot do Grade 2 work. Answers are not easy to find, so borrowing what has worked elsewhere has been attempted. This article presents one effort toward finding what can work to improve learning for pupils in early grades. It is based on the idea of "Reading to Learn" implemented elsewhere and attempted in East Africa by Aga Khan Foundation and independently evaluated by APHRC using randomization methods. Lessons presented highlight the role and complexities of randomization in addressing the educational challenges in East Africa.

INTRODUCTION

As noted by Banerjee and Duflo (2011) in their interesting book *Poor Economics*, answering the big philosophical questions about poverty and what works and what does not work by simple country comparisons has not yielded evidence that inspires confidence. The consequence is that there is no agreed-upon solution to most challenges of development. They strongly market and advocate randomized control trial as the "gold" standard solution to the long-standing debatable issues. One such debatable issue is how to get the majority of learners already in classrooms,

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Correspondence should be sent to Moses Oketch, Institute of Education, University of London, 20 Bedford Way, London, WC1H0 AL, United Kingdom. E-mail: m.oketch@ioe.ac.uk

particularly in poor, developing countries that have recently embraced the idea of universal primary education, to be able to read and do math competently at the appropriate grade level. There are no simple solutions, so numerous decisions are made along the following lines: increase textbooks, increase opportunity to learn, reduce class sizes by hiring more teachers, hold teachers accountable, improve school management, train teachers, and so forth. None of these priorities seem to have led to a straightforward answer or solution, and few produce evidence that inspire confidence. To contribute to this debate, the African Population and Health Research Center (APHRC) participated in a study that uses randomized control trials (RTC) to assess whether Reading to Learn (RtL), an instructional model pioneered in Australia by David Rose and used among the indigenous and other marginalized learners, could improve learning in low-achieving districts of Kenya and Uganda. To validate the replicability of this programme, which has several components, the implementing agency in East Africa, the Aga Khan Foundation and APHRC agreed to apply RCT. This article is not about the results alone but also about some of the lessons learned using RCT to evaluate the RtL programme. The rest of the article provides the background to the project and some of the findings and concludes with insights on the lessons learned.

EAQEL—THE INTERVENTION

East Africa Quality Education and Learning (EAQEL) is a research and development initiative of the Aga Khan Foundation that aims to demonstrate a model for improved learning outcomes in reading and numeracy of early primary grades (1–3) in two districts (Kwale and Kinango) in Kenya and two (Amolatar and Dokolo) in Uganda. The initiative was implemented over a period of 16 months. The project tested an instructional approach based on David Rose's scaffolding model (RtL). RtL is a systematic approach to the teaching of reading with subsequent impact on numeracy.[1]

The project design includes three components: teacher preparedness and practice, school leadership, and classroom learning environments. These components were embedded into two separate but mutually inclusive modules—the "core model" and "core model plus." The core model involved early grade teachers being trained on the instructional approach (EAQEL), which is child centered, is systematic, and focuses on social interaction. In addition, schools were supported to improve teachers' and pupils' access to and use of appropriate teaching and learning materials. Project technical staff worked with head teachers, key teachers, and district education staff from decentralized teacher support resource institutions to train teachers and provide in-class mentoring support. The core model plus included all of the aspects of the core model and had a parental involvement component. The aim was to encourage literacy by establishing minilibraries and encouraging parents to borrow books, read, and tell stories to their children.

The goal of the impact evaluation was to assess the effectiveness of the EAQEL intervention. The objectives in undertaking this impact evaluation of EAQEL were as follows: (a) to determine whether the intervention leads to improved learning outcomes in numeracy and reading among children enrolled in Primary Grades 1, 2, and 3; (b) to determine if there is a critical difference in the learning outcomes of children enrolled in Grades 1, 2, and 3 attributable to the two different treatment models (core model and core model plus) as proposed by AKF; and (c) to determine the key contributing factors that lead to improvements, if any, in numeracy and literacy in grades (1, 2, and 3). These factors may include, but are not limited to, the following: teachers' effective implementation of the RtL approach; availability and use of instructional materials, in-classroom functioning libraries, head teacher active support, the presence and effectiveness (how engaged/involved and influential) of School Management Committees, the level of priority given to lower grades in the allocation of school resources (there may not be an effective School Management Committees but the school head prioritizes early grade, and vice versa), uptake in parents borrowing books and using them with their children, proximity of a functioning library, parental support for attendance, class size, and family literacy and education levels, among others.

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[1] Aga Khan Foundation (AKF).

THE CONTEXT

Uganda and Kenya are two East African countries where political goodwill and international support have led to the Universal Primary Education and Free Primary Education policies in 1997 and 2003, respectively. These policies have led to remarkable growth in enrollment because they removed the direct tuition fee that had been a major barrier to access for many children. However, this increase in access has potential negative effects on the quality of learning. Specifically, there is growing concern that millions of children spend many days in school but learn very little. For example, in Uganda, learners in Grade 3 scored 16.81% on a written literacy test and those in Kenya scored 48.35% in a similar test (Oketch et al., 2010).

PROFILES OF STUDY DISTRICTS—KENYA

Kwale District is an administrative district in the Coast Province of Kenya. In 2007, the larger Kwale district was split to form the current Kwale and Kinango districts. According to the 2009 census, the population sizes of the Kwale and Kinango districts were 151,978 and 209,560, respectively. Kinango and Kwale were the worst-performing districts in the country in 2007 end of primary examinations. Kinango has one of the highest levels of poverty in the country, with half of the population living below the poverty line and two thirds considered food poor (Kenya National Bureau of Statistiscs, 2010). Among the challenges in the district is low community participation among parents in their children's education due to poor attitudes toward education and also the misconception that with the FPE program parents have no responsibilities for their children's education.

PROFILES OF STUDY DISTRICTS—UGANDA

Amolatar and Dokolo are two districts in the northern region of Uganda, which for about 20 years has experienced civil war due to the disgraced Lord's Resistance Army of Kony. With the end of the civil war, there have been efforts by the government and a number of international partners to provide an effective education. AKF has been active in this regard. Literacy rates in Uganda, according to the National Assessment (National Assessment of Progress in Education, 2007), were 45.5% at Primary Grade 3 and 49.6% at Primary Grade 6. Thus, students in Grade 6 are only 4 percentage points more likely to be literate. So students learn effectively nothing between Grades 3 and 6 if they are not literate by Grade 3. Numeracy competencies were rated at 44.8% at Primary Grade 3 and 41.4% at Primary Grade 6. The National Assessment of Progress in Education report further noted that literacy and numeracy rates of these two districts were below the national average. The EAQEL baseline analysis undertaken by APHRC found written literacy to be appallingly low at 1.63% and 5.08% for Grades 1 of 2010 and 2009, respectively, for the two districts (Oketch et al., 2010).

EDUCATION IMPACT EVALUATION STUDIES IN AFRICA

Recently, there has been growing interest in impact evaluation in education in the region to determine how best to improve educational outcomes. This has led to the prominence of RCT studies in the region, although overall, they are still few. Further, some object to their application in education on the basis of ethical concerns and their cost in setup and implementation. However, the proponents of RCT note that they save money in the long run because they provide clear treatment effects, whether positive or zero, and in so doing result in more efficient future resource allocation. Furthermore, because it is never known whether the treatment is helpful, harmful, or makes no difference, the denial of treatment through randomization is considered an ethically neutral scenario (Hutchison & Styles, 2010). Generally, education impact evaluation studies in Africa are quite few and are mainly concentrated in a handful of countries, Kenya included. Examples from Kenya include the flip chart study by Glewwe, Kremer, Moulin, and Zitzewitz (2000); merit scholarship program for adolescent girls by Kremer, Miguel, Thornton, and Ozier (2005); Vermeersch and Kremer (2005) on the effects of subsidized school meals on school participation, educational achievement and school finance; the study on teacher incentives based on students' scores by Glewwe, Ilias, and Kremer (2003); Glewwe, Kremer, and Moulin (2009) on the impact of text books on test scores; and the study on the effect of deworming school children on school attendance (Miguel & Kremer, 2004). Most of these studies were concentrated in the districts of Busia and Teso in western Kenya where the Abdul Latiff Jameel Poverty Action Lab has one of its labs.

The study on flip charts by (Glewwe et al., 2000) used retrospective and prospective analyses of flip chart provision to assess the effect of flip charts on student scores in rural schools. The retrospective analyses used data from 100 randomly selected schools involved in a separate project that provided textbooks and grants, prior to 1998. Although the retrospective analysis showed an effect of up to 20%, after controlling for other learning inputs, the prospective analyses concluded that there was no effect. The study argues that the observed effect in the retrospective analysis could have been due to selection bias.

Another study on scholarship targeted adolescent girls who were in school and in Grade 5 or 6 in January 2001 (Kremer et al., 2005). A total of 127 schools were randomly assigned, using random numbers, to either the scholarship or comparison group. End-of-year district mock exams were used to award scholarships to the top 15% of the girls in Grade 6. Although there was no significant program impact in Teso district, girls in Busia district showed large gains (0.22–0.27 standard deviations), and the gains were sustained up to 1 year after qualifying for a scholarship. Program externalities were also observed with boys recording sizeable average test gains, and both teacher and student attendance increased in treatment schools. The estimation strategy involved the use of a nonparametric locally weighted regression technique following an education production framework. In addition, the study used regression discontinuity to explore within-school impacts of the program in 2002—that is, a comparison of the 2002 outcomes of girls who barely won the scholarship to girls who barely lost out—in order to estimate the impact of winning.

The study on preprimary school meals targeted 50 preprimary schools that were randomly divided into treatment and comparison groups of 25 schools each (Vermeersch & Kremer, 2005). This followed the stratification of schools by geographic location and participation in other projects sponsored by the implementing NGO. The 50 schools were grouped into pairs with similar preprogram characteristics, and a coin was tossed to select the school to be in the treatment group. Baseline data were collected from children 4 to 6 years of age who were living within 4 km of a preprimary school. Using a probit model with random effects to estimate the probability of a child being present in school, the results showed that school participation was 30% higher in the treatment group than in the comparison group. The study also found that in treatment schools, class sizes increased despite a rise in school fees. The comparison schools reduced their fees.

Glewwe et al. (2003) examined teacher incentives and their effect on students' scores. In this teacher incentive study, 50 schools were selected from a group of 100 schools that were considered by the Ministry of Education to be in need of assistance. On average, these schools performed more poorly in examinations than other schools in the area (Busia and Teso districts). Schools were numbered alphabetically and the odd numbered schools were chosen to participate in the teacher incentive program. Teachers of Grades 4 to 8 participated in the study—the incentive was 21% to 43% of their monthly salary award at the end of the year based on the best-performing school and/or best-improved school in the district mock exams. The study examined the differences in test scores between the treatment and comparison schools using a random effect regression framework that allowed for the possibility that scores of students in the same grade and same school might be correlated due to unobserved characteristics of teachers and headmasters. The baseline scores were based on the district examination scores of 1996 (as there were no district exams results available in 1997). The program years were 1998 and 1999, whereas the postprogram year considered in the analysis was 2000. The Kenya Certificate of Primary Examination scores were also used to independently evaluate the impact of the incentive. The study utilized the difference in test scores between treatment and comparison schools, and the difference-in-difference estimator of the effect of the program. Students in the incentive schools had higher test scores during the program period, due to short-run test scores effect. There was no teacher effort aimed at increasing long-run learning. The study also found that teacher attendance did not improve, homework assignment did not increase, and pedagogy did not change.

In the textbook study reported by (Glewwe et al., 2009), 25 schools were randomly selected from a group of 100 schools that the Ministry of Education district office considered to be in particular need of assistance. Schools were listed alphabetically based on their geographical location. Every fourth school beginning with the first one in a list was selected to be included in the schools to receive treatment/text books (Group 1) at the beginning of 1996. Every fourth school beginning with the second, third, and fourth were assigned to Groups 2, 3, and 4, respectively.

Group 3 received educational improvement grants at the beginning of 1997, Group 3 at the beginning of 1998, and Group 4 at the beginning of 1999. The study used a random effects estimation procedure and then presented a levels estimator based on comparing posttest scores across treatment and comparison schools. Differences between pre- and posttest scores were also compared. The study assumed the effect of text books to be 0.20, 0.13, and 0.07 standard deviations for levels, difference, and subject-based estimators. Results show that there was no increase in average test scores, except for the bright learners (the top two quintiles of initial academic achievement). The intervention also increased the probability of students transiting to secondary school.

These studies are useful in informing EAQEL impact evaluations in a number of ways. First, there is no body of knowledge that has emphasized early grades evaluating literacy and numeracy in Kenya and Uganda. Second, the design and interpretation of EAQEL is consistent with or superior to the prevailing practices in other RCT's that have been conducted in the region.

METHODS

This study attempted to answer the following research questions:

1. Are children in lower primary grades (1, 2, and 3) able to read and do mathematics calculations more proficiently as a result of the RtL/scaffolding approach?
2. Are there differences in proficiency for children who have been exposed to parental involvement in the RtL approach (core model plus) compared to those exposed to the RtL approach with no parental involvement (core model), and compared to control schools?
3. What are the key contributing factors to these improvements in numeracy and literacy in Grades 1, 2, and 3?

Design

RCT impact evaluations attempt to answer the following question: What would have been the outcome if the participants did not receive treatment (Ravallion, 2001). In most impact evaluation studies, a comparison group is used as a counterfactual to establish what the outcome would have been. In randomization, the participants are randomly assigned to treatment and comparison groups. The underlying principle is that any observed average difference in outcome can only be as a result of the program or intervention (Duflo, Rachel, & Kremer, 2006). The impact evaluation in this report used RCT methods. The benefit of an RCT design is the simplicity in result interpretation and the clear isolation of the intervention's impact through the control group counterfactual while avoiding selection bias problems that exist in other evaluation designs. In addition to the quantitative approach of RCT, focus group discussions (FGDs) were conducted with parents to provide explanations for the observed results. This was restricted to core model plus in order to highlight mechanisms by which parental involvement might influence the outcomes of the intervention.

Sampling Procedures

Selection of Schools

Preexisting AKF clusters of schools in the case of Kenya and subcounties in the case of Uganda were randomly assigned to either the control or treatment group of the EAQEL intervention. The subcounties in Uganda, then, are effectively equivalent to Kenyan clusters, and we refer to both using the cluster terminology for the remainder of the study. By this design, all schools residing within treatment clusters received the treatment, and all schools within control clusters did not. Through clustering, contamination that may have resulted if both treatment and control schools were in the same cluster was minimized.

Figure 1 shows the study's design. There were a total of 41 clusters in the study, with 31 in Kenya and 10 in Uganda. Kenya's clusters fall within two districts, Kwale and Kinango. The district of Kinango was further subdivided into clusters that did or did not participate in the Kenya School Improvement Program (KENSIP) intervention. KENSIP was an earlier intervention undertaken by AKF whose effect needed to be isolated from the effect of EAQEL. Uganda's clusters also fall within two districts, Amolatar and Dokolo. The final randomization occurred within five strata (defined by three districts, plus one district divided between KENSIP and non KENSIP). Of the 41 clusters, 19 received the treatment (either core or core plus, depending

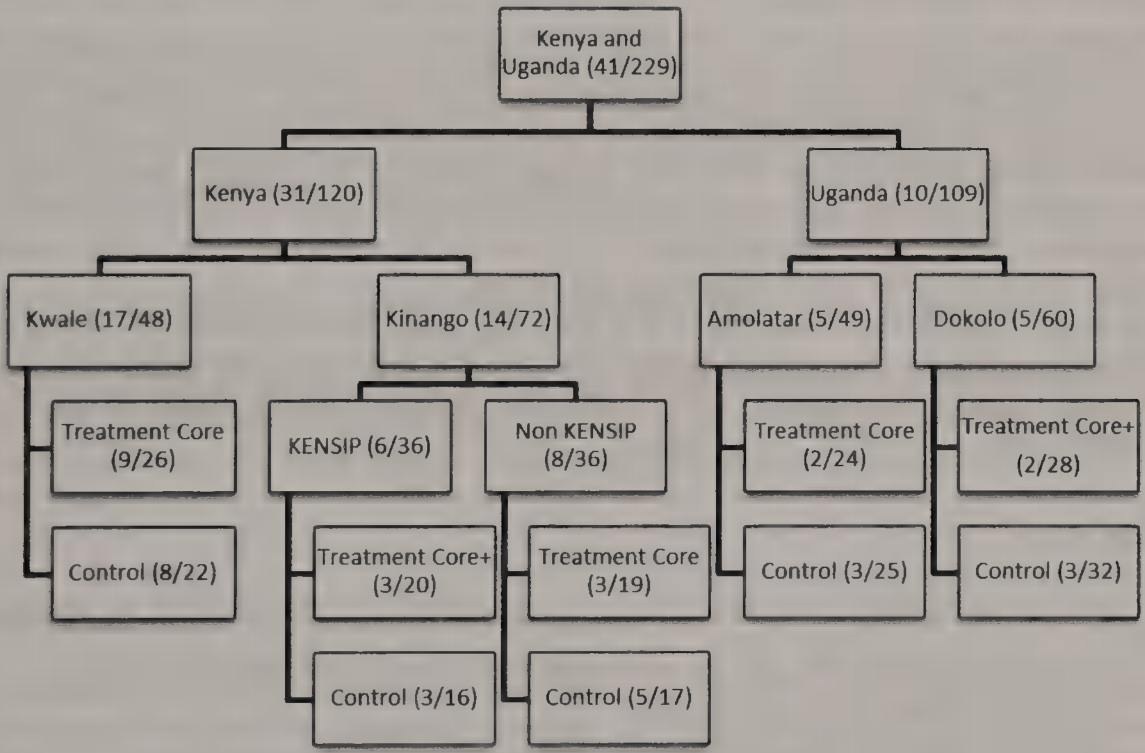

FIGURE 1 Sampling frame for Kenya and Uganda. *Note.* The first number in parentheses is the number of Aga Khan Foundation clusters in Kenya, or subcounties in Uganda (i.e., the unit of randomized assignment). The second number in parentheses is the number of schools in all clusters/subcountries. KENSIP = Kenya School Improvement Program.

on the district) and 22 were in the control group. However, one school in Amolatar and one in Dokolo were randomly assigned to a control cluster but were later selected to be "model treatment schools" by AKF (a classic instance of experimental crossover between treatment and control conditions).

Selection of Pupils

The design of the study was such that it was not necessary (or financially feasible) to assess all pupils in each grade in the sampled schools. Therefore, a random sample of 20 pupils was selected in each grade. The random sampling was done by first grouping pupils by sex; and then selecting each sex based on their proportion in the class. Based on the *baseline I* experience, the sample was increased to 25 pupils for the 2010 Grade 1 in our *baseline II* to allow for any possible attrition due to absenteeism and school transfers. The same pupils were followed at the endline survey that took place between June and July 2011. During the endline survey, pupil absenteeism presented a sample attrition problem. To address the attrition problem at endline, the pupils who were lost to follow-up were randomly replaced, taking sex into consideration. This did not pose any methodological threat to the study because the intervention was administered at class level.

Selection of Parents

An initial sample of 180 parents was targeted for the focus group discussion during the endline. A total of 106 parents turned up for the participation of the actual FGD. The selection of parents was first done by randomly selecting 10% of the schools in the core model plus districts. The selected schools were assigned to be either a male or female FGD. Then, 15 pupils in each of the sampled schools were randomly selected and provided with letters inviting their parents to participate in the FGD. Among the details in the letter to the parents were the venue, time and whether it was the father or the mother who was invited.

In total, 12 FGDs were conducted, five in Amolatar (three treatments and two controls) and seven in Kinango (four treatments and three controls). The FGDs were held separately for men and women, except in one school in Kenya where both male and female parents participated in the same FGD.

Study Tools[2]

To undertake the impact evaluation, several tools were developed. They included the following:

1. Pupil assessment tools: one for each measure of Literacy and one for Numeracy
2. Teacher characteristics questionnaire
3. Classroom observation checklist
4. School characteristics questionnaire

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[2] Please write to info@aphrc.org for more details on the tools.

5. Household characteristics questionnaire
6. Focus group discussion study protocol

Pupil Assessment Tools

The EAQEL teaching approach focuses on literacy and numeracy in early grades 1, 2, and 3. In developing standardized assessment tests to assess the impact of EAQEL, several consultation meetings with key stakeholders and experts were held. The stakeholders included EAQEL implementing agency (AKF), APHRC, national assessment and curriculum experts, academics, and practitioners in numeracy and literacy assessment. These experts came from Kenya and Uganda as well as other countries. Several stages were involved in developing the assessment tools. First, a pool of questions was developed drawing on curriculum from both countries. For instance, in numeracy, the team came up with a pool of 50 test items in each of the grades. The competencies and skills for Grade 1 were examined and agreed upon by the team. In the case of Grades 2 and 3 the competency and skills domains were repeated but the level of difficulty of test items required higher order thinking.

Second, the pool was refined with the input of assessment experts, and from this pool the final test items were selected. Third, the test items were translated into Kiswahili and Lang'o, the languages of instruction in the Kenyan and Ugandan study sites, respectively. These languages are also widely spoken in the catchments area of these schools.

There was one test tool for numeracy and another two test tools for each of the written and oral literacy for all the three grades, with students in higher grades taking all of the lower grade questions along with the questions appropriate for their grade. The rationale for having one assessment tool covering the three grades was to permit determination of how pupils in higher grades scored on items for lower grades (e.g., to determine how competent Grade 2 pupils would be on Grade 1 items in both numeracy and literacy).

School and Household Characteristics Questionnaire

Other instruments developed by APHRC and agreed on by both partners included questionnaires to gather information on the schools, teacher's characteristics, and household characteristics. These were adapted from ongoing APHRC research work that collects similar information.

Scoring

Scoring of the literacy and numeracy assessment test was done for each grade using the sum of the items that grade was supposed to attempt as the denominator and expressing a student score as a percentage. For example, a Grade 1 pupil who correctly answered all the 15 Grade 1 numeracy items scored 100%, whereas a pupil in Grade 2 who correctly answered all the 30 numeracy items for Grade 2 (i.e., 15 items from Grade 1 and another 15 at Grade 2 level) scored 100% (see Table 1). For the purpose of computing the impact of EAQEL using Difference

TABLE 1
Number of Test Items and Total Score per Grade

Assessment	Grade	Items[a]	Total Score
Oral literacy	1	52	76
	2	83	120
	3	94	155
Written literacy	1	38	50
	2	53	71
	3	74	144
Numeracy	1	15	20
	2	30	48
	3	45	75

[a] For example if the pupil was asked to read five letters, then these are five separate items.

in Difference (DID), pupils' endline scores were computed based on the test items they were supposed to respond to at the *baseline*.

Description of the Sample

This study was undertaken in two districts in Kenya (Kinango and Kwale) and two in Uganda (Amolatar and Dokolo). As mentioned earlier, these districts were chosen by AKF for EAQEL intervention because they have consistently performed poorly in national examinations. On the basis of our sample design described in the previous sections, this study included a total of 229 schools distributed as shown in Table 2.

Baseline Sample

Baseline was carried out in two phases. The first phase was conducted in July and August 2009 and targeted 9,160 pupils in both Grades 1 and 2. The second phase was carried out in February and March 2010 for incoming Grade 1 and targeted 5,725 pupils. This was in line with

TABLE 2
Distribution of Schools by District

	Control		Treatment	
District	No.	%	No.	%
Kinango	33	45.83	39	54.17
Kwale	22	45.83	26	54.17
Amolatar	24	48.98	25	51.02
Dokolo	31	51.67	29	48.33
Total	110	48.03	119	51.97

the intervention period and aimed to capture all three grades (1, 2, and 3) in the impact evaluation. However, in the actual *baseline* test, the number (14,404) of pupils assessed was less than the target (14,885). The reasons for the difference between the target and actual were (a) some classes had fewer pupils below the target sample size of 20 pupils in 2009 and 25 in 2010 and (b) during the testing time, a few pupils disappeared from the test venues and some were also absent during call backs.

Endline Sample

During the endline (follow-up), a total of 13,944 pupils were captured. This consisted of 9,397 pupils followed from the baseline (67.4% of the baseline sample). The rest were new pupils sampled to replace those lost mainly due to absenteeism. Table 3 shows the proportion of pupils who were assessed for each of the assessment tests, both at baseline and endline. Table 3 also shows the follow-up group and the number of pupils who could not be traced.

During the endline survey, we targeted teachers in treatment schools who were captured at the baseline irrespective of the grade they were teaching in 2011 as well as those currently teaching Grades 1 to 3. In total, 445 teachers were interviewed and the distribution of the number of teachers who were interviewed is as shown in Table 4.

Attrition

Even when baseline attributes are balanced across treatment and control groups, some students cannot be located at the endline. The main concern is that attrition is nonrandom (i.e., lower achieving students leave the sample) and that patterns of attrition differ across treatment and control groups. For example, one could imagine that a treatment could prevent student drop-out (or attrition), thus altering the relative composition of students in treated schools versus control schools at the follow-up. These differences in endline achievement, introduced by attrition, could be mistaken for the impact of the treatment.

Table 5 examines treatment and control group attrition. Panel A shows that, overall, about 34% of the baseline students in the treatment group could not be located at the endline. However, about 38% of the control group could not be located. The difference between the likelihood of attrition across the two groups is not statistically significant. This provides a measure of confidence that differential attrition did not create further imbalance in the treatment and control groups.

Panel B in Table 5 compares the baseline scores of "attritors" from the treatment group and those from the control group. Note that, on average, treatment group attritors are lower achieving than those in control groups (though not statistically significant). Also note that the difference is very similar to the difference in baseline test scores among all students. Thus, the attrition does not appear to have introduced further imbalance in baseline test scores across treatment and control groups. In conclusion, although levels of attrition are high—and not surprisingly so, given the context—differential attrition does not seem to be an important threat to the internal validity of the estimated treatment effects.

TABLE 3
Endline Sample by Grade and Test

	Numeracy				Written Literacy				Oral Literacy			
Cohort	Initial Sample	New	Traced	Not Traced	Initial Sample	New	Traced	Not Traced	Initial Sample	New	Traced	Not Traced
Grade 1, 2010												
Overall (Both KE & UG)	5251	1,551	3,442	1,809	5239	1,554	3,432	1,807	5234	1,545	3,431	1,803
KE	2727	303	2,122	605	2727	303	2,119	608	2716	303	2,116	600
UG	2524	1,248	1,320	1,204	2512	1,251	1,313	1,199	2518	1,242	1,315	1,203
Treatment	2753	777	1,837	916	2754	777	1,837	917	2758	774	1,834	924
Control	2498	774	1,605	893	2485	777	1,595	890	2476	771	1,597	879
Boys	2610	803	1,701	909	2607	804	1,692	915	2598	797	1,691	907
Girls	2641	748	1,741	900	2632	750	1,740	892	2636	748	1,740	896
Grade 1, 2009												
Overall (Both KE & UG)	4590	1,488	2,982	1,608	4573	1,494	2,975	1,598	4507	1,485	2,977	1,530
KE	2424	453	1,859	565	2414	454	1,856	558	2418	449	1,858	560
UG	2166	1,035	1,123	1,043	2159	1,040	1,119	1,040	2089	1,036	1,119	970
Treatment	2401	721	1,636	765	2395	724	1,634	761	2356	722	1,635	721
Control	2189	767	1,346	843	2178	770	1,341	837	2151	763	1,342	809
Boys	2259	758	1,453	806	2251	764	1,449	802	2209	757	1,448	761
Girls	2331	730	1,529	802	2322	730	1,526	796	2298	728	1,529	769
Grade 2, 2009												
Overall (Both KE & UG)	4560	1,490	2,973	1,587	4563	1,491	2,959	1,604	4508	1,499	2,934	1,574
KE	2407	482	1,806	601	2409	479	1,789	620	2403	485	1,787	616
UG	2153	1,008	1,167	986	2154	1,012	1,170	984	2105	1,014	1,147	958
Treatment	2389	777	1,593	796	2394	777	1,580	814	2366	786	1,562	804
Control	2171	713	1,380	791	2169	714	1,379	790	2142	713	1,372	770
Boys	2268	752	1,458	810	2270	751	1,449	821	2236	755	1,430	806
Girls	2292	738	1,515	777	2293	740	1,510	783	2272	744	1,504	768

Note. KE = Kenya; UG = Uganda.

TABLE 4
Distribution of Teachers Interviewed

District	Teachers (*n*)	%
Kinango	135	30.34
Kwale	104	23.37
Amolatar	84	18.88
Dokolo	122	27.42
Total	445	100.00

Baseline Balance Across Treatment and Control Groups

At the baseline, there was small difference in test scores (Oketch et al., 2010) in favour of the control group in Kenya, particularly in numeracy. This has implications for the analysis of the end results because ideal randomization assignment implies that baseline test scores should be similar, on average, across treatment and control groups. Overall, Table 6 indicates that students attending treated schools at baseline have modestly lower baseline test scores, although the differences are only statistically significant in the case of the overall numeracy test (pooling Kenyan and Ugandan samples) and in the numeracy test only in the Kenyan sample. In oral literacy, for example, the differences are approximately 12% of a standard deviation and statistically insignificant.

To address the baseline imbalance in test scores, the analysis at the endline used DID technique, which is a straightforward and clear way of assessing the treatment effect of the intervention.

RESULTS OF THE RCT IMPACT EVALUATION

Treatment Effects on Numeracy

Table 7 shows the pooled DID data for Kenya and Uganda. The results indicate that there is no treatment effect on numeracy. At the country level results shown in Table 8, one of the key highlights is that in Grade 1, 2010 shows a DID of –3.92 percentage points, which indicates

TABLE 5
Attrition

	Treatment	Control	Difference
Panel A: Proportions			
Proportion of baseline cohort not in endline	0.342	0.376	–.035
Panel B: Scores of those in baseline cohort not in endline			
Numeracy score	–0.161	–0.023	–.137
Written literacy score	–0.141	–0.002	–.139
Oral literacy score	–0.113	0.014	–.127

Note. Treatment and control group as originally defined by African Population and Health Research Center.

TABLE 6
Baseline Test Scores

	Treatment	Control	Difference
Numeracy score	−0.078	0.076	−.153*
Kenya	−0.122	0.126	−.248**
Uganda	−0.030	0.027	−.057
Written literacy score	−0.076	0.075	−.151
Kenya	−0.089	0.093	−.182
Uganda	−0.062	0.057	−.120
Oral literacy score	−0.061	0.060	−.121
Kenya	−0.060	0.062	−.123
Uganda	−0.063	0.058	−.120

Note. Mean of standardized test scores. Treatment and control group as originally assigned by African Population and Health Research Center.

*Significant at 10%. **Significant at 5%.

that schools in the control group performed better in Kenya. In Uganda, Grade 1 of 2010 shows a positive DID of 6.45 percentage points in favour of the treatment group. The statistical significance shown in the two cohorts is possibly noise introduced by the low number of clusters and, therefore, the pooled data indicating no treatment effect on numeracy in both countries is more reliable.

Table 9 presents the impact of EAQEL at the district level. These results suggest that these effects are similar across the two districts in Kenya, but due to the fewer number of clusters in each district, we cannot precisely assess their statistical significance. The point estimates for Dokolo are particularly positive for the Grade 1 2010 cohort. Similarly, that of Kinango is large compared to the others, but due to the small number of clusters in each district, these estimates are not statistically significant. Therefore, the differences in the DID point estimates between the districts or differences of the point estimates from zero should be taken not as statistically significant, but informational.

Pupil Abilities at the Baseline

The EAQEL intervention was designed to have a greater impact among those pupils who were not able to do numeracy and literacy on their own. To examine the impact of EAQEL

TABLE 7
Difference in Difference (DID) in the Numeracy Assessment Both Countries

Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Treatment (t_1–t_0)	9.44	18.81	22.37
Control (t_1–t_0)	9.39	17.63	19.70
DID	0.04	1.18	2.68

Note. t_1 is endline, t_0 is baseline.

TABLE 8
Difference in Difference (DID) in the Numeracy Assessment by Country

Country	Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Kenya	Treatment (t_1–t_0)	7.33	16.12	28.16
	Control (t_1–t_0)	11.25	14.75	25.38
	DID	−3.92**	1.37	2.78
Uganda	Treatment (t_1–t_0)	13.08	23.35	12.75
	Control (t_1–t_0)	6.63	22.31	11.50
	DID	6.45**	1.04	1.25

Note. t_1 is endline, t_0 is baseline.
**$p < .05$.

on the learning outcomes of low- and high-performing pupils within each district, we placed pupils into three categories according to their performance at baseline: those who scored below 1 standard deviation from the mean (the lowest scoring students), those who scored within 1 standard deviation below and above the mean (the middle scoring students), and those who scored more than 1 standard deviation above the mean (the highest scoring students).

Table 10 presents the results based on standard deviation categorization for Kenya and Uganda. It is notable that there was no treatment effect on numeracy across the cohorts among pupils who scored higher marks at the baseline. In Kenya, Grade 1, 2010 cohort pupils scoring 1 standard deviation below the mean gained statistically significantly less than the control group. In Uganda, Grade 2, 2009 cohort, a differential positive impact was seen among those ranked 1 standard deviation below the mean.

TABLE 9
The Difference in Difference (DID) Based on Numeracy in Kenya

District	Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Kinango	Treatment (t_1–t_0)	7.32	16.89	30.42
	Control (t_1–t_0)	10.80	13.92	23.19
	DID	−3.48	2.97	7.23
Kwale	Treatment (t_1–t_0)	7.34	15.02	25.06
	Control (t_1–t_0)	11.86	15.99	28.69
	DID	−4.52	−0.96	−3.62
Amolatar	Treatment (t_1–t_0)	18.58	27.03	18.83
	Control (t_1–t_0)	13.63	21.33	16.17
	DID	4.95	5.69	2.66
Dokolo	Treatment (t_1–t_0)	9.56	20.80	8.44
	Control (t_1–t_0)	1.27	23.00	8.21
	DID	8.29	−2.20	0.23

Note. Due to fewer numbers of clusters at district level of analysis, statistical significance cannot be determined for the point estimate differences shown in the table.

TABLE 10
Learning Outcomes of Low- and High-Performing Pupils Based on the Numeracy Scores

Grade/District	Group	< −1 *SD*	Within −1 & 1 *SD*	> +1 *SD*
Grade 1, 2010				
Kenya	Treatment (t_1–t_0)	23.70	5.75	−4.81
	Control (t_1–t_0)	29.94	9.71	−4.57
	DID	−6.25**	−3.97**	−0.24
Uganda	Treatment (t_1–t_0)	29.07	14.86	−15.41
	Control (t_1–t_0)	32.90	10.19	−20.30
	DID	−3.84	4.67	4.88
Grade 1, 2009				
Kenya	Treatment (t_1–t_0)	32.68	14.40	−0.27
	Control (t_1–t_0)	37.65	14.19	−0.10
	DID	−4.98	0.21	−0.18
Uganda	Treatment (t_1–t_0)	43.22	25.73	1.61
	Control (t_1–t_0)	41.85	25.44	−1.38
	DID	1.37	0.30	2.98
Grade 2, 2009				
Kenya	Treatment (t_1–t_0)	45.32	27.92	9.85
	Control (t_1–t_0)	46.22	26.73	10.05
	DID	−0.90	1.19	−0.20
Uganda	Treatment (t_1–t_0)	25.11	13.65	−0.40
	Control (t_1–t_0)	18.63	13.42	−1.21
	DID	6.48**	0.23	0.81

**$p < .05$.

Summary of the Numeracy Assessment Results

The DID presented in Tables 9 and 10 indicate that EAQEL had no overall effect in improving numeracy when the countries are combined or in each country separately. As noted earlier, this is a true reflection of absence of treatment effect in numeracy achievement as the DID takes into account any differences that may exist between treatment and control groups at the baseline.

Although the district level results show an unbiased point estimate difference, their significance cannot be determined due to fewer numbers of clusters.

TABLE 11
Difference in Difference (DID) in the Oral Literacy Assessment Both Countries

Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Treatment (t_1-t_0)	17.51	21.19	18.51
Control (t_1-t_0)	15.69	19.53	16.02
DID	1.81	1.66	2.49

Note. t_1 is endline, t_0 is baseline.

TABLE 12
Difference in Difference (DID) Between Treatment and Control in Oral Literacy by Country

Country	Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Kenya	Treatment (t_1–t_0)	18.60	21.88	19.03
	Control (t_1–t_0)	18.69	21.81	18.64
	DID	−0.09	0.07	0.39
Uganda	Treatment (t_1–t_0)	15.64	20.16	17.65
	Control (t_1–t_0)	11.19	15.62	12.20
	DID	4.45**	4.54**	5.45**

Note. t_1 is endline, t_0 is baseline.
**$p < .05$.

Treatment Effects on Oral Literacy

Tables 11 and 12 present country specific treatment effects of the EAQEL intervention based on the oral literacy scores. In the table, the treatment and control row entries show the mean difference between endline and baseline (score increases) for each of the groups, whereas the DID row presents the percentage point difference in difference between the treatment and control groups (i.e., the treatment effect).

The DID results in Uganda are positive and significant across all the three cohorts, whereas none is significant in Kenya. These results indicate that EAQEL/RtL had a positive treatment effect on oral literacy in Uganda but not Kenya.

Table 13 presents a comparison of the treatment and control schools by district, in Kenya and Uganda, respectively—although, as noted earlier, district level analysis in terms

TABLE 13
The Difference in Difference (DID) Based on Oral Literacy

District	Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Kinango	Treatment (t_1–t_0)	17.86	24.02	23.02
	Control (t_1–t_0)	17.62	23.32	21.19
	DID	0.24	0.70	1.83
Kwale	Treatment (t_1–t_0)	19.63	18.55	13.53
	Control (t_1–t_0)	20.19	19.58	14.87
	DID	−0.57	−1.02	−1.33
Amolatar	Treatment (t_1–t_0)	20.40	25.14	21.49
	Control (t_1–t_0)	15.19	20.08	12.08
	DID	5.21	5.06	9.41
Dokolo	Treatment (t_1–t_0)	12.65	16.74	14.90
	Control (t_1–t_0)	8.06	12.50	12.28
	DID	4.59	4.23	2.63

Note. Due to fewer numbers of clusters at district level of analysis, statistical significance cannot be determined for the point estimate differences shown in the table.

TABLE 14
Learning Outcomes of Low- and High-Performing Pupils Based on the Oral Literacy Scores

Grade/District	Group	< -1 *SD*	Within -1 & 1 *SD*	$> +1$ *SD*
Grade 1, 2010				
Kenya	Treatment (t_1–t_0)	29.10	17.97	10.68
	Control (t_1–t_0)	29.22	18.13	10.20
	DID	−0.13	−0.16	0.48
Uganda	Treatment (t_1–t_0)	31.72	15.30	1.99
	Control (t_1–t_0)	28.12	11.10	−2.39
	DID	3.61	4.20	4.39
Grade 1, 2009				
Kenya	Treatment (t_1–t_0)	36.55	22.39	7.40
	Control (t_1–t_0)	35.89	22.69	8.86
	DID	0.67	−0.30	−1.46
Uganda	Treatment (t_1–t_0)	41.50	17.71	7.35
	Control (t_1–t_0)	38.02	14.39	2.95
	DID	3.47	3.32	4.40
Grade 2, 2009				
Kenya	Treatment (t_1–t_0)	30.12	21.24	3.26
	Control t_1–t_0)	33.33	20.41	3.46
	DID	−3.21	0.84	−0.21
Uganda	Treatment (t_1–t_0)	34.72	16.34	3.87
	Control (t_1–t_0)	26.11	12.91	0.00
	DID	8.61	3.43**	3.87

$^{**}p < .05$.

of significance levels has to be interpreted cautiously due to fewer numbers of clusters. Consistent with country-level results, there is no treatment effect in both districts in Kenya.

In Uganda, the core model plus was implemented in Amolatar district and the core model in Dokolo. EAQEL shows a positive impact on oral literacy across the three grades in both Amolatar and Dokolo. In Amolatar, an impact of 5 percentage points for the cohorts of both Grades 1 of 2010 and 2009 is observed. The most striking DID result is the 9 percentage points for 2009 cohort of Grade 2 in oral literacy. In Dokolo, the highest DID was observed in the 2010 cohort of Grade 1 (4.6 percentage points) and the least with the 2009 cohort of Grade 2 (about 3 percentage points). This suggests that, based on point estimates alone, the core model plus had a greater impact than the core model in Uganda.

Pupil Abilities at the Baseline

Table 14 presents results by categorization of pupils' performance at baseline by how far their score was from the mean score below 1 standard deviation, within 1 standard deviation, and above 1 standard deviation of the mean. In Kenya, the gains are large, but there is no EAQEL treatment effect on oral literacy across the initial performance categories. In Uganda, an average performing pupil (within 1 standard deviation) consistently benefited more from the intervention. Contrary

TABLE 15
Difference in Difference (DID) in the Written Literacy Assessment Both Countries

Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Treatment (t_1–t_0)	22.15	29.43	27.79
Control (t_1–t_0)	19.74	28.84	24.69
DID	2.40	0.59	3.10

Note. t_1 is endline, t_0 is baseline.

to the expectations of the intervention, high achievers in Uganda also show a rather impressive treatment effect across all grades. Nonetheless in Amolatar there is impressive treatment effect of about 7 percentage points among the low-performing pupils in Grade 2 of 2009 (results not presented).

Written Literacy Treatment Effects

Tables 15 and 16 present country-specific treatment effects (DID) of the EAQEL intervention based on the Written Literacy. The Written Literacy results show a positive treatment effect in Uganda across the three cohorts, whereas in Kenya, there is none.

Table 17 presents a comparison of the treatment and control schools by district in Kenya and Uganda, respectively. The gain scores (t_1–t_0) for the treatment and control groups are highly significant. Larger DID were observed among pupils in Uganda compared to those in Kenya, though pupils in Uganda had much lower baseline mean scores.

In Kinango, where the core model plus was implemented, results show positive DID point difference for the Grade 2 of 2009 cohort. In Kwale, where the core model was implemented, the control Grade 1 of 2009 cohort, which is control group, shows a positive DID point difference of 4 percentage points. In Uganda the DID point differences are larger than those observed in Kenya, but the statistical significance cannot be determined due to fewer cluster numbers at the district level.

TABLE 16
Difference in Difference DID Between Treatment and Control in Written Literacy by Country

Country	Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Kenya	Treatment (t_1–t_0)	27.29	31.95	27.89
	Control (t_1–t_0)	27.49	34.70	25.69
	DID	−0.20	−2.75	2.21
Uganda	Treatment (t_1–t_0)	12.83	25.48	27.90
	Control (t_1–t_0)	8.10	19.24	23.27
	DID	4.73**	6.24**	4.63**

$^{**}p < .05$.

TABLE 17

The Difference in Difference (DID) Based on Written Literacy by District, Kenya

District	Group	Grade 1, 2010	Grade 1, 2009	Grade 2, 2009
Kinango	Treatment (t_1–t_0)	24.52	33.32	30.60
	Control (t_1–t_0)	24.57	34.98	28.01
	DID	−0.05	−1.66	2.60
Kwale	Treatment (t_1–t_0)	31.27	29.88	23.75
	Control (t_1–t_0)	31.57	34.28	22.23
	DID	−0.30	−4.41	1.52
Amolatar	Treatment (t_1–t_0)	14.51	24.86	32.97
	Control (t_1–t_0)	12.19	19.14	22.68
	DID	2.32	5.72	10.29
Dokolo	Treatment (t_1–t_0)	11.78	25.91	24.29
	Control (t_1–t_0)	4.91	19.31	23.69
	DID	6.87	6.60	0.60

Note. Due to fewer numbers of clusters at district level of analysis, statistical significance cannot be determined for the point estimate differences shown in the table.

TABLE 18

Learning Outcomes of Low- and High-Performing Pupils Based on theWritten Literacy Scores

Grade/District	Group	< −1 *SD*	Within −1 & 1 *SD*	> +1 *SD*
Grade 1, 2010				
Kenya	Treatment (t_1–t_0)	18.57	29.37	20.07
	Control (t_1–t_0)	22.36	29.00	22.76
	DID	−3.79	0.38	−2.69
Uganda	Treatment (t_1–t_0)	—	11.57	23.69
	Control (t_1–t_0)	—	8.01	9.14
	DID	—	3.56**	14.55***
Grade 1, 2009				
Kenya	Treatment (t_1–t_0)	29.73	36.27	16.72
	Control (t_1–t_0)	35.08	39.86	18.59
	DID	−5.35	−3.59	−1.86
Uganda	Treatment (t_1–t_0)	—	24.77	34.16
	Control (t_1–t_0)	—	18.32	26.05
	DID	—	6.44***	8.11
Grade 2, 2009				
Kenya	Treatment (t_1–t_0)	37.98	30.83	7.43
	Control t_1–t_0)	34.05	30.27	10.40
	DID	3.93	0.56	−2.97
Uganda	Treatment (t_1–t_0)	27.37	28.67	22.67
	Control (t_1–t_0)	22.52	22.85	25.53
	DID	4.85	5.82**	−2.86

Note. The missing (—) mean scores for Uganda is a result of very low mean scores for Written Literacy at the baseline for Grades 1 2010 and 2009 cohorts such that few pupils fell below 1 *SD* from the mean.

**$p < .05$. ***$p < .01$.

Pupil Abilities at the Baseline

Table 18 presents the results based on standard deviation categorisation for districts in Kenya and Uganda, respectively. In Kenya, there is no treatment effect on oral literacy across pupil ability levels in all the cohorts.

In Uganda, the mean scores for Written Literacy at the baseline were very low for Grade 1 in 2010 and 2009, such that few pupils fall below 1 standard deviation from the mean. EAQEL had a positive effect for the pupils ranked within 1 standard deviation of the mean at their baseline scores. For the pupils who at baseline were 1 standard deviation above the mean, the EAQEL intervention had a positive and large DID benefit of about 15 percentage points among the Grade 1cohort of 2010 in Uganda.

The Role of Program Implementation

After implementation, but without knowing the endline test scores, AKF created a simple categorization of the treated schools based on the fidelity of program implementation (or uptake). The three categories—high, medium, or low—are based on 11 separate indicators of implementation observed by AKF personnel.

Table 19 examines whether the treatment effects are sensitive to the degree of program implementation. In the first column, three separate coefficients indicate treatment effects among

TABLE 19

Treatment Effects in High-, Medium-, and Low-Implementing Schools

	Global Mean			Heterogeneous Effects		
	Numeracy	Written Literacy	Oral Literacy	Numeracy	Written Literacy	Oral Literacy
Intention to Treat × High Uptake	0.033	0.191***	0.219***			
Intention to Treat × Medium Uptake	0.012	0.087	0.165**			
Intention to Treat × Low Uptake	−0.064	−0.018	0.036			
Intention to Treat × High Uptake × Kenya				0.029	0.097*	0.165**
Intention to Treat × Medium Uptake × Kenya				−0.099	−0.030	0.020
Intention to Treat × Low Uptake × Kenya				−0.200**	−0.111*	−0.060
Intention to Treat × High Uptake × Uganda				0.013	0.358***	0.300**
Intention to Treat × Medium Uptake × Uganda				0.147	0.233**	0.340***
Intention to Treat × Low Uptake × Uganda				0.138	0.118	0.179*
N	8,920	8,850	8,819	8,920	8,850	8,819
R^2	0.28	0.34	0.29	0.28	0.35	0.29

Note. Sample of students who completed specified endline test and at least one baseline test. Endline test scores standardized based on cohort, country, and grade at endline. Intention to treat defined through original African Population and Health Research Center randomization. All regressions include controls for all three baseline tests (students who did not take a particular test are given a score of 0), a dummy variable for each missing baseline test score, interactions between cohort and country, a dummy variable for sex, and district fixed effects separately by Kensip status for all but one district in each country. Standard errors clustered at the unit of randomization (cluster for Kenya, subcounty for Uganda).

*Significant at 10%. **Significant at 5%. ***Significant at 1%.

schools with high, medium, or low implementation. Note that implementation does not matter for numeracy effects, since all are small and statistically indistinguishable from zero. For both literacy assessments, the full-sample effects are highest among the high implementation category (19–22% of a standard deviation). In contrast, they are zero among the low category of schools.

It is also instructive to assess treatment effects by implementation status in each country. The final columns of Table 19 confirm once again that in Uganda the treatment effects are uniformly positive for all levels of implementation. However, note that effects are relatively lower in low-implementing schools. In Kenya, the results are particularly striking because they now show small and statistically significant treatment effects (10–17% of a standard deviation) but only in high-implementing schools.

In conclusion, the results suggest that implementation quality, as judged by the criteria and observation of AKF, is an important mediator of program effects. It even suggests that, among a subset of Kenyan schools, there were small positive effects.

CONCLUSIONS AND DISCUSSION

The following broad conclusions can be drawn from the results presented in the various tables on the impact evaluation of EAQEL: (a) on average, the EAQEL intervention was effective at raising Ugandan literacy, both written and oral; (b) it was not effective at raising Kenyan literacy; and (c) it was not effective at raising numeracy in either country.

The results present an important puzzle. What can explain the generally positive findings in Uganda, and the much weaker findings in Kenya? The first potential explanation is that the baseline achievement and resource levels were lower in Ugandan schools. In this regard, the two districts included in the study had suffered greatly in the recent Ugandan conflict and had a more limited supply of instructional materials than the districts in Kenya. The provision of any instructional materials or libraries could more easily have an immediate effect on students who would have had very few materials in the absence of treatment. In addition, the EAQEL-provided instructional materials in Uganda were the first materials available to these schools in the local language. In Kenya, with better resourced classrooms and higher levels of initial achievement, the intervention's effect might have been weaker.

A second explanation is that the assessment tools showed some evidence of ceiling effects. The scores of Kenyan students—who had higher initial levels of achievement—were at the top of the measurement scale. That is, some students answered all items correctly. In this case, the growth of treated Kenyan students' test scores is attenuated relative to control students. Even so, this explanation bears a more careful examination of the item-level test score, and the use of alternative statistical techniques to analyze the data.

A third explanation comes from the potentially differential implementation in the two countries. This explanation was somewhat explored in Table 19, but important differences could still remain. Different individuals, with potentially varied ideas on adequate implementation, rated school-level implementation in the two countries. Also, teachers were trained in their respective countries. Other differences include an emphasis on including all the steps of the RtL framework in a single lesson in Kenya, whereas the thematic baseline curriculum in Uganda lent itself to splitting the steps across multiple lessons; and the differential model of funding "support tutors" resulted in more follow-up with the treatment schools in Uganda than in Kenya. Although these explanations are speculative, they can serve as the basis for additional analysis of quantitative and qualitative data, as well as discussion with AKF.

Lessons Learned

RCT as an evaluation method is still debated and still unacceptable by some education practitioners and researchers, the argument being that this method borrowed from the medical field doesn't address the complexity in the education field. The moral dilemma question has always been about treating some and leaving others out. Those opposed to RCT claim this is a major weakness and justifies why it is not appropriate in education. There are rejoinders, nonetheless, who argue that the ultimate benefit is to everyone. The dangers are minimal to everyone, too (Hutchison & Styles, 2010). This debate still goes on, and while implementing EAQEL, we experienced it. Many of the control schools felt that they should have been part of the study and some of the community leaders were so enthusiastic that they had already promised their local schools that a new programme that would benefit their children was soon to be rolled out. They wanted to take credit for this, even if they didn't care what RCT was about. They didn't in fact understand what RCTs are. So, when the baseline was conducted and some schools eventually selected as treatment and others left out as control, there was much disappointment. The extent to which this affects the implementation, local support of project, and its effect on results is part of the debate on RCT that warrants further reflection on the application of RCT in education.

Most RCT are small in scale, and the programme implementer doubles as the evaluator. Where there is independent impact evaluation, as was the case in EAQEL, there can be several complex challenges. The first challenge is to overcome the interest of the implementing agency that there shouldn't be "special" schools that must be part of the study. This is never easy, because in the case of EAQEL, the implementing agency had worked with some of the schools for decades and felt that such schools should be included as treatment schools. This brings in the challenge of contamination, too, because these schools tend to be located in one geographical area. It requires strong negotiation and agreement, and often there will be a few mistakes along the way, where some schools not required to be in treatment are included, or some thought to be in treatment end up in control.

Implementing agencies, if not used for independent evaluation, often expect the results to be positive, as the practice is usually to use pre–post methods that do not truly capture programme effects. This is a natural expectation, particularly because the costs involved in implementing projects with an RCT component are very high. When the results are negative, acceptance is often difficult, and the questions raised often go back to wanting to say that RCT is not appropriate.

The independent evaluator usually relies on the good will of the implementer through monitoring an evaluation system to offer accurate implementation information that would facilitate analyses of the effect of uptake on the results. Such information can be complex to gather and normally the independent evaluator may want to be less involved in the implementation and not be privy to what has actually happened during the implementation.

Implementation where teachers are involved can be complex because different teachers and schools may partake to implement the project differently. Without clear documentation of school processes that facilitate or undermine the project, implementation information used in the impact evaluation can be misleading.

Where two or more countries are involved, comparison is inevitable, yet it can be clear that the practices in the different countries may lead to different results. This information is hardly available to the independent impact evaluator and at the stage of analysis, what may emerge could be wrong treatment effect because one country may have just had the right conditions that allow such effect to occur. An example might be a case where one country has no resources and the other has resources, such that any introduction of resources associated with a project may indicate treatment effect and lack of effect on those with resources. Project implementers often want greater attribution to indicate that a project works, but sometimes, in some of the projects, separating the component that actually led to the effect can be difficult. In the case of EAQEL, it is unclear if the positive literacy results observed in Uganda could be attributed to teachers or to resources that were introduced. Because Kenya already had these resources, it is difficult to separate the true effect of the composite EAQEL parts.

Although RCT is appealing, the EAQEL study in East Africa indicates is that it is complex to introduce in the field of education; Banerjee and Duflo (2011) claimed that it is the "gold standard" to address global economic issues and understand the poor is widely appealing, but the complex side of this approach in education needs more debate and research. The fallouts and what Heyneman (2012) referred to as "monopoly of methodology" needs to be considered before the major donors such as DFID and USAID all devote their resources toward RCT for evidence gathering in education.

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AUTHOR BIOS

Moses Oketch is Director of Research at African Population and Health Research Center (APHRC), a Reader at the Institute of Education, University of London, and Adjunct full professor at University of Pennsylvania, GSE. He has published extensively on educational access and quality, skills and development.

Moses Ngware is Research Scientist at APHRC and present head of its Education Research Program. Prior to joining APHRC in 2007, he worked with Kenya Institute for Public Policy Research and Analysis, and he has also taught in Kenyan universities and secondary schools. His current research interests are in teaching and learning and has published several articles in peer reviewed journals.

Maurice Mutisya is a data analysis at APHRC and works with the Education Research Program. He holds a BSc degree in Computer Science and Mathematics from Jomo Kenyatta University of Agriculture and Technology and a Master of Science degree in Population and field based Epidemiology from University of Witwatersrand in South Africa.

Admassu Kassahun is a Post-Doctoral Fellow at APHRC. He previously worked at the Population Analysis and Study Center of the Central Statistical Authority in Ethiopia and as a lecturer at the Demographic Training and Research Center (DTRC) in Addis Ababa University. His research interest includes education and social stratification, adolescents' transition to adulthood and migration and household livelihood.

Benta Abuya is a Research Associate at APHRC. She has several years of combined experience as education researcher and teacher. Her research interests include: education policy issues of access, equity, and quality; the linkages between education and health outcomes for adolescents; gender, and the impact of families on the education, resources allocation, and health outcomes of their school going children.

Peter Musyoka a Research Officer at APHRC supporting the Education Research Program. He holds a Bachelors degree in Education (Economics & Mathematics) from University of Nairobi and MA (Economics) with focus on Health and Environmental Economics from Chancellor College, University of Malawi. His research interests are in human capital development.

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The "Developing" Achievement Gap: Colombian Voucher Reform

Jonathan M. B. Stern
Peabody College of Vanderbilt University

The achievement gap in many developing countries is defined in terms of rich/poor and public/private. The prevailing explanation for the "developing" achievement gap is an underfunded, inefficient, and/or inadequately supplied public school sector. Via an analysis of a Colombian voucher experiment, this article examines the extent to which income-contingent vouchers can narrow the achievement gap and provide a cost-effective method for increasing secondary school enrollments. Despite structural and implementation flaws, which diminish the program's impact on achievement and enrollments, its successes strengthen the argument that implementing an income-contingent voucher program can help narrow the achievement gap in developing countries. To cost-effectively increase enrollments, however, significant modifications and expansions to the program would be necessary—as explained in the conclusion of this article.

Colloquially referred to as No Child Left Behind, the full title of arguably the most comprehensive federal education bill in the history of the United States reads, "An Act: To close the achievement gap with accountability, flexibility, and choice, so that no child is left behind" (No Child Left Behind, 2001, p. 1425). Without any further elaboration, one would expect that nearly all education researchers in the United States would be able to provide an appropriate explanation for what is meant by the "achievement gap" in the title of this bill. A term bandied about in the field with great regularity, in its simplest form "the 'achievement gap' in education refers to the disparity in academic performance between groups of students" (Editorial Projects in Education, 2004, p. 1). Although this interpretation does allow for the achievement gap to be defined for any and all groups of students, the EPE goes on to offer that in the United States, "it is most often used to describe the troubling performance gaps between many African American and Hispanic students, at the lower end of the performance scale, and their non-Hispanic white peers" (p. 1). It is important to note, however, that this universally accepted definition of the achievement gap within our country's borders is not applicable everywhere.

In developing countries, the achievement gap is most frequently defined for four distinct—but not mutually exclusive—groups of students: (a) rural versus urban, (b) national (dominant) language versus indigenous language, (c) rich versus poor, and (d) public school versus private school (Bettinger, 2005; Hornberger, 2000; James, 1993; Lopez & Kuper, 2000; McEwan &

Correspondence should be sent to Jonathan M. B. Stern, Peabody College of Vanderbilt University, Department of Leadership Policy and Organization, Peabody GPC# 414, 230 Appleton Place, Nashville, TN 37212. E-mail: jonathan.stern@vanderbilt.edu

Carnoy, 2000; Somers, McEwan, & Willms, 2004; Uribe, Murnane, Willett, & Somers, 2006). Although all four of these gaps are of serious concern in developing countries throughout the world, this article focuses specifically on the divide between rich and poor, as well as that between public and private school students—which, due to the structure of the education system in many developing countries, are highly correlated (James, 1993; Uribe et al., 2006).

The prevailing explanation for the achievement gap between rich and poor—and public and private—in the developing world stems primarily from public expenditures on education. When governments are unwilling or unable to sufficiently subsidize public education, the inadequate supply of public school spaces (in conjunction with the often low-quality public sector) creates a demand that is met by the private school system (James, 1993; Somers et al., 2004; Tooley & Dixon, 2005). The problem is often exacerbated at the secondary school level because the primary level is often the main focus of governmental expenditures on education. This is supported by the work of Estelle James, who—in a study of 50 "advanced industrial societies" and developing countries—found that the mean percentage of students enrolled in private secondary schools was nearly 50% higher in developing countries (James, 1993). Although recent trends have given rise to a low-cost private sector across the globe, the traditionally short supply of public school spaces, coupled with high prices of private schools, ultimately lead to a rich-poor enrollment gap in many developing countries. In addition, even for those students who have the opportunity and means to attend school, the differing quality in schooling options (for high- and low-income students) remains significant and has served to widen the achievement gap (Angrist, Bettinger, Bloom, King, & Kremer, 2002; King, Rawlings, Guitierrez, Pardo, & Torres, 1997; Uribe et al., 2006; World Bank, 2011).

When government funding and public school spaces are limited, governments and aid organizations have employed a variety of programs and initiatives to increase high-quality educational access for all students. Although these programs (including cash transfers, scholarships, concessionary schools, etc.) all have their merits, some countries have chosen to implement income-contingent voucher schemes in an effort to level the playing field. As a supply-side solution, income-contingent vouchers offer the promise of increased capacity (by providing private school vouchers to public school students—thus freeing up public school spots for those previously unable to attend) and increased opportunity (especially for those moving from public to private schools), both of which have the presumed benefit of narrowing the rich–poor gap with regard to enrollment and achievement (Arenas, 2004; Hsieh & Urquiola, 2003; Kremer, 2002; Zimmer & Toma, 2000).

Via an in-depth examination of one such voucher experiment, el Programa de Ampliación de Cobertura de la Educación Secundaria (PACES)—a secondary school voucher program in Colombia—this article attempts to answer the following questions: Can income-contingent (a.k.a. overflow) vouchers help narrow the achievement gap in developing countries? Are educational vouchers an efficient (i.e., cost-effective) method for increasing secondary school enrollment? What lessons can be learned from the design of the Colombian voucher reform?

PACES

Educational privatization and school choice are two of the most regularly (and often contentiously) discussed topics in education today. It is important to note, however, that educational privatization—although frequently opposed or advocated prima facie—is a multifaceted, multidimensional approach to school reform that has taken on various forms over the years.

> For example, tuition tax credits [have been] provided to parents to partially or fully compensate them for private school tuition; publicly funded educational vouchers or certificates [have been] used to pay for private schools; and public education authorities [have contracted] with private, for-profit entities to operate their schools. (Belfield & Levin, 2005, p. 2)

Although examples of each of these approaches can be found in education systems throughout the world—and an examination of each would surely provide tremendous insight into the effects of privatization policies worldwide—this article is limited to a specific evaluation on the use of educational vouchers for secondary school students in Colombia.

In a simplified generalization of the voucher debate (not particular to Colombia): Critics of the voucher system customarily raise concerns about religion in schools, social cohesion, and educational equity, whereas voucher proponents typically assert that vouchers provide students/families with greater freedom of choice and will offer a more efficient educational system via the free market. Unfortunately, people all too often take immutable stances on either side of the educational voucher debate—on primarily ideological grounds—without a full comprehension of the complexity and nuance inherent in any given voucher system. Consequently, this article provides a thorough examination of the finance, regulations, and support services of the Colombian voucher program before drawing any conclusions about its relative merits with regard to narrowing the achievement and/or enrollment gap for secondary school students.

Although education policy reform debates in the United States often revolve around how to optimize educational opportunities for primary and secondary school students, "discussions about vouchers in developing countries center on the supply of and access to primary and secondary education" (Bettinger, 2005, p. 5). Subsequently, "the voucher debate in Colombia was not about competition; it was about how to increase the capacity of the country to promote and manage additional enrollment" (Bettinger, 2005, p. 5). Despite an impressive expansion of investment in the education sector in Colombia throughout the 1960s and early 1970s—leading to an increase in the average years of schooling from 2.5 to 5.5—"the growth of the education sector virtually stopped around 1975, mainly as a consequence of institutional problems, extremely centralized management, and lack of political will to make the necessary investment and changes" (Calderon, 1996, p. 1). Although primary school enrollment continued to increase—reaching 85% in 1990—secondary school enrollment suffered a different fate, with approximately one half of the eligible students attending secondary school (Calderon, 1996). The situation was far worse for students in the poorest two quintiles, as "the gap in enrollment rates between the poorest and richest students in Colombia was almost 35 percent" (Bettinger, 2005, p. 5). One of the major reasons behind this disparity was that although "a low-income household spends, on average, 9 percent of its income on secondary education, a high-income household spends only 1.7 percent" (Calderon, 1996, p.2). This has had far-reaching implications for low-income household members who were often unable to find places for their children in already overcrowded public schools and unable to afford private schools. Furthermore, according to Calderon (1996), the ability of high- and higher middle-income families to send their children to private schools "had the serious effect that the dominant social and economic sectors [had] shown no personal interest in the quality and development of public education" (p. 2). Ultimately, it appears that the call of global competition caused the government of Colombia to refocus its effort on rebuilding the education system in the 1990s, paying particular attention to increasing secondary school enrollment.

In March 1991, with a public school system at capacity and a public infrastructure unable to meet the demand for public schools, it became apparent that if the government was serious about making significant changes, a new approach was necessary. Consequently, in the midst of a national transformation toward decentralization, which brought about "shifting power from the central government to local institutions and [an] expanding role of the private sector in the provision of public services" (p. 9), Education Minister Alfonso Valdivieso began working on a voucher program (King et al., 1997). Within a year, Valdivieso's proposed plan was approved and the Programa de Ampliación de Cobertura de la Educación Secundaria (PACES) was initiated in late 1991, with support from the World Bank (Angrist et al., 2002; Calderon, 1996; King et al., 1997).

Officially introduced as part of the 1992 Decentralization Bill, PACES awarded more than 125,000 vouchers before being discontinued in 1998 (Angrist et al., 2002). Specifically targeting students in the lowest two economic quintiles, PACES sought to increase secondary enrollment "by exploiting the existing strong private infrastructure to expand capacity quickly" (Mayer, n.d., p. 7). To avoid criticism that the voucher plan would threaten public school resources, "the government assured public schools that current levels of funding would not decrease" (King, Orazem, & Wohlgemuth, 1999, p. 471). Also, by targeting only low-income students, PACES effectively countered "the claim that vouchers amount to a net subsidy for the wealthy at the expense of the poor" (King et al., 1999, p. 471). Furthermore,

> in an attempt to counter fears of politicization and central government management which would discourage participation, [PACES] was administered through the Instituto Colombiano Educativo y Estudios Tecnicos en el Exterior (ICETEX), which had previously managed study abroad programs, and voucher payments were made directly through the Banco Central Hipotecario (BCH). (Mayer, n.d., p. 7)

Ultimately, the main objectives of PACES, as posited by Calderon (1996), were to

> (i) close the gap between the relatively high primary school enrollment rate and the relatively low secondary enrollment rate . . . (ii) to expand the very limited choices that the poorest families had in relation to secondary education for their children, and (iii) to improve equity. (p. 3)

It is with these objectives in mind that we now turn to an in-depth look at the design and structure of the PACES voucher plan. Following the comprehensive structure for examining the design instruments central to any voucher plan—as defined by Levin and Belfield (2005)—the following section looks at the finance, regulation and support services of PACES.

FINANCE

By averaging the tuition fees of low-to-middle cost private schools in Colombia's three largest cities (i.e., Bogotá, Medellin, and Cali), PACES established a fixed-price for its vouchers (Angrist et al., 2002). There are, however, two important points that must be acknowledged here: (a) if the worth of the voucher exceeded that of the tuition of a given private school, the school would only receive the amount of their regular tuition, and (b) if families wished to send their children to private schools with fees exceeding that of the set voucher amount, they were permitted to supplement the voucher with personal contributions (Angrist et al., 2002; Kremer, 2002).

While relying on World Bank loans to subsidize approximately 5,500 vouchers per year,

> the Ministry decided that the central government would pay for 80 percent of the cost of each voucher and the cities would cover the other 20 percent. [Furthermore,] most mayors were interested

> in expanding secondary schooling for a fraction of its cost and hence became involved and helped promote it. (Calderon, 1996, p. 5)

With regard to the actual payment of the voucher, PACES relied heavily on the aforementioned BCH. While the Colombian Social Investment Fund was responsible for channeling the government's share of payments, participating schools received their funds directly through BCH (King et al., 1997). As a matter of fact,

> school principals were instructed to open an account, free of charge, at any of the 120 BCH branches . . . [and] every three months, upon presentation by the school of the grades of the voucher beneficiaries, the school's account would be credited in the appropriate amount. (Calderon, 1996, p. 8)

Generally, the first two payments of the year (along with a small portion of the third payment) consisted of the central government's contribution, whereas the remainder of the third payment was from the respective municipalities. Furthermore, "when students drop[ped] out in the middle of the academic year, an adjustment [was] made in the remaining annual payments to the school" (King et al., 1997, p. 14). (Note: Additional financing and administrative cost information is examined further in the section on productive efficiency.)

REGULATION

Regulatory measures were established for PACES with regard to student, school, and municipality participation. Because students' eligibility was relevant only if they had access to an eligible school—and schools' eligibility relied on their location within a participating municipality—it seems most appropriate to analyze the regulation requirements beginning at the municipal level.

"Municipalities of 10,000 or more inhabitants, located less than 50 kilometers from a departmental capital and with three or more private schools were eligible to participate" (Mayer, n.d., p. 9). In addition, "each municipality decided how many vouchers to fund, subject to a maximum allocated to towns by the central government. This allocation was determined by estimating the shortfall between primary-school enrollment and the available space in public secondary schools" (Angrist et al., 2002, p. 1538). When the demand of voucher applicants exceeded the maximum municipal allocation, a lottery system was implemented—and in certain cities with excess supply, such as Bogotá, ICETEX even "provided software and instructions to regional offices for the purposes of random selection of applicants" (Angrist et al., 2002, p. 1539). Ultimately, "municipalities choosing to participate were required to maintain a system of accounts set according to a nationally prescribed standard . . . [whereas] ICETEX was to be responsible for regulation of municipalities and their participation" (Mayer, n.d., p. 9).

At the school level, the most prominent regulation was that only those licensed schools in participating municipalities that offered a traditional academic or vocational curriculum were eligible to receive vouchers (King et al., 1997). Also of great significance was the fact that PACES vouchers were limited to private schools. However, although participating private schools initially "included for-profit schools, religious-affiliated schools, and schools run by charitable foundations" (p. 1538), by 1996 for-profit schools were excluded from PACES (Angrist et al., 2002). To mitigate against schools increasing their fees as a result of the voucher—once initial eligibility was determined on the previously stated criteria—all schools were required to "provide information on their matriculation and tuition fees at the time of entry" (King et al., 1997, p. 12).

Also, according to King et al. (1997), in addition to regular monitoring of participating schools by ICETEX, “to regulate the quality of participating schools, new schools that [were] interested in the program [were] required to present a three-year curriculum plan” (p. 12). Resultant from these regulations—as is discussed further in the sections on scope and equity—”participating schools tended to serve lower-income pupils, and to have lower tuition than nonparticipating private schools . . . [and] schools with a vocational curriculum were also overrepresented among those in the program” (Angrist et al., 2002, p. 1538). In addition, Restrepo (2004) noted that poor monitoring of these schools had a significantly negative effect on both the short-term and long-term objectives of the program.

As previously stated in this article, PACES was a targeted voucher program for students entering secondary school, namely, sixth graders younger than 15 (Kremer, 2002)—in the lowest two economic strata of six, based on a neighborhood stratification scheme (King et al., 1997). Therefore, “applicants had to submit a utility bill to establish residential location and voucher eligibility” (Angrist et al., 2002, p. 1537). In an attempt to avoid subsidizing students who would have attended a private secondary school regardless of voucher status (King et al., 1997), according to Calderon (1996), the government required families “to show proof that their children had finished primary school at a public school” (p. 6). A final regulation regarding student participation was that vouchers were to be automatically renewed each academic year until graduation from secondary school, provided a student did not fail/repeat any grade. In other words, if a voucher recipient was forced to repeat a grade, he or she was to be dropped from the program automatically (Angrist et al., 2002; Calderon, 1996; King et al., 1997).

SUPPORT SERVICES

Although a significant component of any successful voucher program, there is very little information regarding support services in the PACES literature. Most apparent is the complete lack of information regarding transportation. Both in terms of cost and access, transportation should be considered an integral aspect of the voucher system design process—especially in the implementation of a system with selection criteria such as income, based on neighborhood stratification. For, as Mayer (n.d.) asserted—citing King et al.’s (1999) usage of tuition as a proxy for academic quality—“if better schools are more expensive schools, they are less likely to be in poorer areas. If students wish to upgrade to these schools they will most probably face increased transportation costs” (p. 10).

Calderon (1996) did, however, note that support services were not lacking altogether. For example, “the main characteristics of the program were made public during visits by the Minister and the Vice-Minister of Education to each of the program cities, and were advertised in the local newspapers and radio stations” (p. 6). For parents interested in enrolling their children in PACES, voucher applications were made available both through newspaper advertisements and at all regional ICETEX offices. Furthermore, families/neighbors/local organizations could share in the responsibility of acquiring and disseminating these applications, as they could be photocopied and distributed accordingly. However, despite modest attempts to facilitate the application process, the support services for PACES ultimately left much to be desired.

With the design instruments of finance, regulation, and support services clearly defined for PACES, this article now focuses on an in-depth evaluation of the Colombian voucher program, analyzing the extent to which it was successful in increasing choice and enrollment opportunities for low-income students, its productive efficiency, and the ultimate effect it had on closing the achievement gap.

ACCESS AND CHOICE

> Complete freedom of choice could be defined as a situation where students could attend any school of their choosing, unfettered by economic, transportation or other constraints, and where schools would be considerably distinct in their character so as to make that choice significant. (Mayer, n.d., p. 12)

Levin (1991) further asserted that subcomponents of choice and access include things such as magnitude and range of school costs covered by vouchers, the range of choices with regard to school philosophies, the degree of regulation of curriculum and admissions, and the short-run and long-run supply of schools. With these components at the crux of the debate, did PACES truly provide considerably increased access and freedom of choice for a significant number of secondary school students in Colombia, thus decreasing the gap between rich and poor students?

Although PACES provided more than 125,000 students with vouchers over 7 years, it is important to note that this number accounts for approximately one tenth of the private school secondary enrolment in Colombia and only about 4% of the total secondary school enrolment (Bettinger, 2005, p. 5). In addition, according to King et al. (1997) only 216 (20%) of the country's municipalities participated in PACES, further limiting the range of students affected by the program. More specifically, "large urban municipalities with greater numbers of primary school students, more limited public school capacity, and larger existing private school capacity [were] the most likely to participate in the program" (p. 4). Approximately 4 to 5 years into the program, issues surrounding decreased quality and political opposition complicated matters even further.

In 1995, in Bogotá, for example, 15% of the 12,000 voucher students were in "new" schools—most of which had problems with quality and many of which subsequently closed. This had serious implications with regard to choice because, as Calderon (1996) noted, "parents who send their children to the new schools usually have no other option—they do not have access to public schools nor the means to pay for any extra tuition in private schools" (p. 13). In addition to many new schools being shut down and concomitant with the exclusion of for-profit schools from PACES in 1996, choices became narrowed further due to the ministry of education's unwillingness to provide any vouchers beyond the 5,500 subsidized by the World Bank. Consequently, with a constant demand and a diminishing supply, ICETEX reported that municipalities such as Atlántico were only able to provide approximately one fifth of their qualifying applicants with vouchers (King et al., 1997).

With regard to choice and the rich–poor enrollment gap in developing countries, King et al. (1999) asserted that "education choice is not whether to attend public school or private school, but whether or not to attend school at all" (p. 468). Accordingly, it has been argued that the provision of vouchers opened up spaces for out-of-school youth in otherwise full public schools. Kremer (2002), however, noted that many voucher recipients in Colombia were planning to enroll in private schools regardless; therefore, it appears that the program's ability to reduce the enrollment gap was diminished, with only a small number of low-income students now able to attend more expensive (though arguably higher quality) private schools. Ultimately, although PACES may have increased choice for a small percentage of the secondary school population—with no mention of special needs students, no provisions for transportation (and little in the way of support services on the whole), the exclusion of for-profit schools and a limited voucher supply—it does not appear that access and choice were, on the whole, significantly increased. However, to more fully understand whether the secondary enrollment gap was truly decreased, we now turn to an examination of the issue of equity in access.

EQUITY

According to Belfield and Levin (2005), equity refers most broadly to "the quest for fairness in access to educational opportunities, resources, and outcomes by gender, social class, race, language origins, disability, and geographical location of students" (p. 35). More specifically, Levin (2002) noted that the "components of analysis include the degree of access to educational opportunities, the quality of those opportunities including school resources and peers, and the probable educational outcomes for those groups" (p. 27). With regard to PACES, it is necessary to look at (a) the actual population served by the program (did students from the lowest economic strata actually receive more equitable access to educational opportunities?), (b) where these students came from geographically, and (c) the quality of participating schools (were the teacher/school characteristics equitable when compared with public schools and nonparticipating private schools?).

There are several issues to consider when attempting to answer these questions. First, PACES was officially launched in Colombia's 10 largest cities (Calderon, 1996). By limiting access to vouchers to students residing in the largest cities in Colombia—and to participating municipalities which had higher tax revenues (Angrist et al., 2002)—a considerable percentage of the poorest families, residing in rural areas of Colombia, were effectively excluded from participation. Second, applicants were required to present utility bills as proof of residency as a proxy for income (King et al., 1997). Although this requirement would limit applicants to those living in certain targeted neighborhoods, the assumption was that all families would have the ability to provide a utility bill—which would not always be the case for the poorest households. Third, "those interested had to fill out the vouchers included in newspaper advertisements or could obtain free application forms at any of the regional ICETEX offices" (Calderon, 1996, p. 6). Despite providing multiple means through which parents could obtain applications for PACES, the idea of application forms in newspapers (or even at ICETEX offices) assumed a certain level of literacy that may not be found among adults in Colombia's poorest households. Finally, all applicants were required to have already been admitted into a participating private school and many participating students reported that they would have attended private school whether or not they received the voucher (Angrist et al., 2002). In addition to Arenas's (2004) concern that schools are "entitled to reject students through a selective admissions process . . . [and] it is quite possible that children considered undesirable have less chance of being admitted than easy-to-educate students" (p. 390), there are also serious implications for this requirement with regard to the type of student who even applied to these private schools. Because vouchers covered only about half of the private school fees for participants (Angrist et al., 2002) and, as Kremer (2002) noted, "no one is on the private school/no school margin, and so small subsidies to private education do not directly increase overall enrollment" (p. 3), it becomes quite apparent that students from the poorest households would not have applied to private schools in the first place and would therefore not have been served by PACES vouchers.

What is known about the quality of the schools that PACES students chose to attend? King et al. (1997) asserted that "there are no statistically significant differences between the average mastery levels of students in participating private schools and students in public schools in the field of language and mathematics" (p. 33). Angrist, Bettinger, and Kremer (2006) further note that "pupil–teacher ratios and facilities were similar in public and participating private schools, and many of the teachers in the private schools that were most likely to participate in the PACES program were moonlighting or retired public school teachers" (p. 4). Although these findings indicate that voucher students were presented with equitable options in participating private schools as compared with the public schools they were leaving behind, a deeper examination shows that this was not necessarily the case. For example, Mayer (n.d.) noted that public school teachers were actually paid twice as much as PACES teachers, averaged twice the amount of time in school and had more training. In addition, Calderon (1996) offered that quality problems surfaced in many of the "so-called new private schools" and that "during the first stages of the program, lack of control led to the creation of some very deficient schools" (p. 13). In a remark directly contradictory to the argument that PACES increased equity for voucher recipients, Calderon added, "Generally, the parents who enrolled their children in such schools had no other option" (p. 13). With regard to equity between participating and nonparticipating schools, Kremer (2002) noted that "participating schools tended to serve lower-income pupils, and to have lower tuition than non-participating private schools. Relatively elite private schools appeared to opt-out of the PACES program" (p. 2). Furthermore, "there were other indications that the quality of program schools was lower on average than non-program schools. Participating schools were more likely to offer nonacademic (vocational or technical) tracks and had higher pupil–teacher ratios than did nonparticipating schools" (King et al., 1999, p. 485). Finally, Mayer (n.d.), citing Ribero, Tenjo, and Sanabria (2001), offered that "PACES schools were scored high quality only 11% of the time, as compared with . . . 51% for non-participating schools on government ratings" (p. 18). In light of these findings, it would be difficult to argue that equity for low-socioeconomic status, secondary school students was truly advanced by the introduction of PACES or that there was any significant decrease in the enrollment gap between the wealthiest and poorest students in Colombia during this time.

The following section explores the academic aspect of the achievement gap, as well as the cost-effectiveness of PACES in its attempt to narrow both the academic and enrollment gap for secondary school students in Colombia.

PRODUCTIVE EFFICIENCY

In its simplest form, productive efficiency refers to the maximization of (educational) outputs for any given input. Although a seemingly straightforward and self-explanatory definition, the idea of productive efficiency is slightly more complex and nuanced than it first appears. First, the term *educational outputs* must be deconstructed. *Educational outputs* is too often used interchangeably with standardized test scores—but as Levin (2002) asserted, "academic achievement should include not only knowledge as measured on test scores, but also understanding and application of knowledge in real-world situations" (p. 27). In addition, educational "outcomes should include not only the standard academic subjects, but also other skills such as problem-solving, working in teams, and effective decision-making" (Levin, 2002, p. 27). Gill, Timpane, Ross, and Brewer (2001) furthered that "studies should include measures that reflect the richer set of academic outcomes that schools are expected to produce . . . including continuation in school, graduation, and college attendance" (p. 113). Accordingly, the evaluation of PACES with respect to productive efficiency will incorporate a variety of educational outcomes—beyond standardized test scores—along with a few noneducational outcomes, such as hours worked and future earnings potential.

With regard to the cost function, Levin and Driver (1997) proposed a wide array of components necessary for consideration, including accommodation of additional students, record-keeping and monitoring systems, transportation costs, information costs, and costs of adjudication. "Also, there must be a distinction between the costs of producing education at the school site and those associated with the system of monitoring and administering the educational system and providing support services" (Levin, 2002, p. 27). The following analysis of cost-benefits of PACES will include these criteria as well as direct and opportunity costs to families.

Due to the excess demand for PACES subsidies and the subsequent lottery assignment of vouchers, several natural experiments have been carried out to compare achievement results on standardized tests for lottery winners and losers.[1] For example, Angrist et al. (2002) administered *La Prueba de Realizacion* (a multiple-choice achievement test for native Spanish speakers) to just fewer than 300 lottery winners and losers in Bogotá and found that voucher recipients scored just over 0.2 standard deviations higher than lottery losers. To put this number into perspective, "according to U.S. norms for *La Prueba*, two-tenths of a standard deviation is roughly the score gain associated with one additional school year" (Angrist et al., 2002, p. 1545)—which Angrist noted is significant considering these tests were administered to students who had been in voucher schools for only 3 years at the point of testing. Although these gains are impressive, it is important to note that not only is the sample of students quite small but also it is difficult to claim that a sample from Bogotá would be representative of the secondary school population at large.

The results of a second standardized test have also been used to analyze the effectiveness of the voucher system. Angrist et al. (2006) looked at results of Colombia's centralized college entrance exam—also known as the ICFES exam—and found that prior to adjusting for censoring, lottery winners scored less than 1 point higher on both the language and math exam, with similar effects for boys and girls. Mayer (n.d.), citing Ribero et al., (2001), noted that these gains are statistically insignificant. Although Angrist et al.'s (2006) findings with regard to ICFES test scores show neither an advantage nor a disadvantage to voucher schools, their analysis of registration results for the exam point to modest increases in attainment for voucher recipients.

Using registration for the ICFES exam as a proxy for secondary school graduation rates, Angrist et al. (2006) found that after controlling for demographics, lottery winners are about 6 percentage points more likely to take the college entrance exam. In a more recent study on longitudinal effects, Saavedra, Bettinger, Kremer, and Kugler (2011) found that voucher recipients were 10% more likely to access higher education. In addition, Angrist et al. (2002) noted that in their full sample, lottery winners completed 0.8 more years of schooling than lottery losers. Although Kremer (2002) furthered that "lottery winners were about 10 percentage points more likely than losers to have completed 8th grade" (p. 4)—Mayer (n.d.), citing Patrinos (2002), asserted that this advantage may be as high as 13% to 15%. Bettinger (2005) argued that a 25% reduction in repetition rates for lottery winners contributed to these increased levels of attainment. However, Kremer noted that "separate results by sex show moderately larger effects on educational attainment for girls . . . [and these effects] appear to come from both reduced grade repetition and additional time spent in school" (p. 4). Angrist et al. (2002) asserted that the additional time spent in school by girls is directly related to the fact that marriage and cohabitation rates were lower for lottery winners and the finding that lottery winners worked approximately 1.2 fewer hours per week. Although attainment apparently increased—at least in part—as a result of voucher students working fewer hours during the school year, an examination of the rate of return for schooling will be undertaken in the following section on costs.

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[1] It should be noted that this is not a direct public versus private school debate, as many lottery losers still chose to attend private school (at least for 1 year).

As previously mentioned, the costs of a voucher system are multidimensional—this analysis of the costs of PACES will begin with voucher tuition coverage and direct familial costs. Although PACES vouchers were initially designed to cover an annual matriculation fee and ten monthly tuition payments (King et al., 1997), by insufficiently adjusting for inflation, vouchers only covered about half of the voucher recipients' school fees by the mid-1990s (Angrist et al., 2002). More specifically, according to Angrist et al. (2002), lottery "winners' gross school fees exceeded those of losers by about 70 percent of the amount they received from the voucher" (p. 1536). Furthermore, this $52 increase in expenditures combined with a calculated $41 of lost earnings, led Angrist et al. (2002) to "estimate that PACES lottery winners devoted $93 more to education than losers . . . or 126 percent of the $74 in extra scholarship assistance they received" (p. 1551). Kremer (2002) asserted, however, that as voucher recipients completed an additional .12 to .16 grades—based on a recent Colombian labor force survey—winners' average wages should increase by 1.2% per year (or even by as much as 10% if the calculation is based on the achievement gain from standardized tests). With expected yearly earnings of applicants hovering around $3,000, Kremer posited that "PACES seems very likely to raise lottery winners' wages by $36, and might raise wages by as much as $300 per year if higher test scores have a grade-equivalent payoff" (p. 7). Saavedra et al. (2011) similarly find that PACES vouchers increased monthly incomes for beneficiaries by an average of 10%, giving the program a cost–benefit ratio of 7:1. Although Kremer also argued that the benefit of increased future earnings should "easily outweigh" the additional costs of schooling, it is important to note that in a situation where parents earn an average of only $2,400 per year, increased expenditures in the short term might not be feasible, regardless of the potential long-term benefits.

Although it is important to look at the costs of PACES for participants, in order to be able to draw any legitimate conclusions about its productive efficiency it is absolutely essential to examine the actual costs of administering the program. With relation to the public school system, "the voucher program cost the government about $24 more per winner than the cost of creating a public school placement" (Angrist et al., 2002, p. 1536). Furthermore, King et al. (1997) noted that

> ICETEX charges a commission fee of 3.5 percent of the central government's share of the cost of the program. The Social Investment Fund charges less than 0.2 percent of the total cost of the program and, for each of the three transactions carried out annually with a participating school, the Central Mortgage Bank charges 1,000 colombianos. (p. 16)

In addition, although King et al. (1999) asserted that "the monitoring system, even for a geographically targeted program, proved to be quite costly" (p. 489), Calderon (1996) argued that schools relying on vouchers should have been subject to even closer monitoring—which would have increased the costs even more. Further funds would also have been necessary to more closely monitor the payment system to prevent payment delays and to continue providing vouchers in addition to those 5,500 funded by the World Bank. Although the literature on PACES provides some insight into the pertinent program costs (all of which point to increased costs for both participants and the government), there is no mention of costs for support services such as dissemination of information, transportation, and training. Balancing the mixed (or even slightly positive) results on student achievement, attainment, and potential increased earnings with the increased costs across the board (even without accounting for support services), it could be argued that PACES was able to slightly decrease the achievement gap between low-income voucher recipients and their middle-income classmates, but it does not appear that this was accomplished in a cost-effective manner.

NONACADEMIC OUTCOMES

Undoubtedly the most difficult aspect of any educational programming to quantify, nonacademic outcomes are nonetheless essential factors in analyzing a voucher program. Although there is little or no mention of nonacademic outcomes in the majority of the PACES literature, this article provides at least a modest insight into several factors that may contribute to the overall effect of PACES on these criteria.

One major concern of voucher opponents is that the implementation of a voucher program will eventually lead to greater segregation by socioeconomic status. Arenas (2004) noted, however, that because "only low-SES students are voucher-eligible . . . [and] Colombian public schools have historically enjoyed relatively high prestige, particularly when compared with low-tuition private schools . . . thus far, Colombia has been able to minimize segregation" (p. 389). As a matter of fact, Angrist et al. (2002) argued that voucher recipients actually attended more expensive private schools than would have been possible without the voucher, subsequently increasing the socioeconomic status range in participating schools. It is important to note, however, that this range was not necessarily as significant as we may be led to believe, as the most prestigious (i.e., expensive) private schools chose not to participate in PACES.

With regard to what Arenas (2004) called civic socialization, it should be noted that community service is mandatory for both private and public school students in Colombia. Although further research would be necessary to determine whether private or public school students spent more time participating in community service activities, PACES literature shows that in-school participation seems to have increased slightly for voucher students. For example, Mayer (n.d.) asserted that "students in the program were more involved in their education, had more knowledge of curriculum, and felt as if they were listened to when they voiced concerns" (p. 20).

Unfortunately, there is scant evidence in the literature on other, important nonacademic outcomes such as school safety, job placement and any significant measures of social cohesion (both in and out of school). Ultimately, there is insufficient evidence to make an informed judgment regarding the effect that PACES had on many of these essential, nonacademic outcomes.

CONCLUSION

Introduced in late 1991, PACES provided vouchers to more than 125,000 low-income secondary school students throughout its approximate 7 years in operation. After many political struggles and decreased funding in the final years, "in 1998, Colombia dissolved the voucher program.

A new administration did not see the program as central to its educational initiatives" (Bettinger, 2005, p. 7). "The then director of the National Planning Department criticized the reform for its unfulfilled promises and politicization, reiterating the need for an expansion in the education sector if the country [was] to sustain its growth" (Mayer, n.d., p. 20).

Although PACES was successful in providing a relatively small number of low-income secondary school students in Colombia with the opportunity to attend private schools that might otherwise have been too costly, by limiting school options to less than half of the nonprofit private schools in major cities, not addressing the issue of transportation and only providing vouchers for 5,500 students in the program's final few years, PACES never produced its desired results. With regard to enrollment objectives, although PACES targeted the two lowest economic strata for participation, due to an overrepresentation from the second strata, along with inequitable access to schools of the highest standards, PACES did not produce its intended effect of significantly decreasing the secondary enrollment gap by increasing choice for low-income students.

Therefore, if one of the goals of a voucher program was to increase overall enrollment rates by either freeing up public school spaces or providing vouchers to those most in need, modeling a program on PACES would not be advisable. Attaining this goal would require more accessible information for parents, including assistance with voucher applications (particularly in areas with low literacy rates), greater investments in transportation for students, increases in the number and types of schools accepting vouchers, considerations of the proportion of school fees to be covered by the voucher, increased monitoring of schools accepting vouchers (with a particular focus on new schools established in order to take advantage of the voucher system), and stricter regulations regarding voucher recipients (assuming a fixed number of spaces, as opposed to a universal voucher program).

As for academic achievement, voucher lottery winners in Colombia showed several significant gains over their naturally randomized comparison group. Voucher recipients saw a higher likelihood of finishing eighth grade, an increase in years of schooling and high school graduation rates, as well as a reduction in repetition rates and slight increases in achievement test scores. Although the ultimate scope of the program disallows us from making more large-scale claims, these findings support the claim that the PACES program was at least partly effective in decreasing the achievement gap between low- and middle-income students in Colombia.

With regard to productive efficiency, although Angrist et al. (2002) and others have claimed that vouchers increased the quality of education received by their recipients, it is important to note that

> quality has been measured by standardized test scores and rates of retention, promotion and graduation. Other key aspects of quality (e.g. how well a school fosters in students emotional well-being, physical and artistic development, and a sense of empathy for others) have not been studied because of the difficulty of measuring and standardizing the results. Given that quality is much broader than what is currently measured, the results provided for this dimension require cautious interpretation. (Arenas, 2004, p. 382)

Furthermore, even if such stated academic achievements were to be taken at face value, with the increased costs to both families and society, it would be difficult to argue that PACES provided greater productive efficiency than the existing system—and this is without the additional services previously recommended. Finally, although minor claims can be made about in-school participation, there is insufficient evidence to determine PACES's true effect on critical, nonacademic outcomes.

Although PACES no longer exists in Colombia, this analysis provides important lessons for future policies. Despite the fact that PACES had several significant shortcomings, its successes strengthen the argument that implementing an income-contingent voucher program can help to reduce the academic achievement gap in developing countries. However, future reforms would undoubtedly require significant modifications and expansions to their financing and regulations if they are expected to produce meaningful gains in enrollment—and if they wish to do so in a widespread and cost-effective manner.

AUTHOR BIO

Jonathan M. B. Stern is a Pre-Faculty Fellow and Research Associate at Vanderbilt University, where he recently completed his PhD in International Education Policy and Management. His research revolves around the assessment of programs and policies designed to provide educational opportunities to traditionally underserved students. Much of his recent work has been focused on examining the impact of low-cost private schools on access and educational attainment. He holds a master's degree in International Educational Development from Teachers College, Columbia University and a bachelor's degree in Public Policy and American Institutions from Brown University.

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How to Improve Schooling Outcomes in Low-Income Countries? The Challenges and Hopes of Cognitive Neuroscience

Helen Abadzi
World Bank

The international Education for All initiative to bring about universal primary education has resulted in large enrollment increases in lower income countries but with limited outcomes. Due to scarcity in material and human resources, all but the better off often fail to learn basic skills. To improve performance within the very limited capacities of low-income educational systems, instructional interventions ought to be designed according to the ways people retain and recall information most efficiently. Without this research-based line of reasoning, donor and government staff may overestimate students' ability to learn from complex methods and scant practice. Applicable concepts include perceptual learning for scripts, automaticity for basic skills, the limitations of working memory, and formation of cognitive networks in long-term memory. However, education faculties rarely teach these topics. A systematic effort is necessary to popularize cognitive science concepts pertinent to basic skills for staff working in the education sector of lower income countries. Therefore, better understanding and application of learning research is urgently needed if universal primary education is to succeed.

The 1990 Education for All initiative has resulted in an explosion of activity that has continued unabated in the last two decades (UNESCO, 2000). It has resulted in establishing a United Nations Millennium Development Goal of universal primary education. The "for all" expression indicates the goal for countries to educate every student, regardless of achievement level or status, aside perhaps from certain special cases. The emphasis to educate all children has challenged the educational systems of poorer countries to accommodate many additional students with severely limited budgets. In these new circumstances, decisions may challenge the staff of governments and consultants who advise them. What choices should be made and why? Some examples are next.

- Countries with limited infrastructure and teacher availability, like Senegal, Niger, or Mozambique, were advised to reduce class sizes by halving instructional time and instituting multiple shifts. Common sense would suggest that most students would not master

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Correspondence should be sent to Helen Abadzi, College of Education and Health Sciences, University of Texas at Arlington, Arlington, TX 76014. E-mail: habadzi@gmail.com

the intended curricula, particularly given the need to learn French, English, or Portuguese first. Some educators and donor staff protested, but they could not offer convincing arguments or alternatives. Eventually it was presumed that students would somehow "absorb" the curricular content (World Bank, 1999, p. 29). Subsequently an article in a Nigérien newspaper stated that to succeed in school a student had to be either gifted or well off (Boubakar, 2003).

- To prevent massive dropout and repetition due to instruction methods, policymakers in low-income countries were advised to institute automatic promotion, sometimes up to the end of primary school. Again, some educators sensed that children would not learn in higher grades what they did not learn in the lower ones. Social promotion has become a worldwide policy, despite the lack of a logical understanding of how people learn. This resulted in widespread illiteracy among graduates of some countries, such as Togo and Niger (Mingat, 2003).

A Minister of Education in Central America decided to change reading textbooks from phonics to the whole language approach. The minister thought that it was worth waiting for the new textbooks because students ought to learn reading through generative words and authentic texts. Similarly, a donor agency advised an African country contemplating curricular changes to save money by not reprinting existing textbooks until new curricula and new textbooks were available. Without textbooks, much of classroom time is spent copying from the blackboard. Many students sketch letters, the meaning of which they do not understand, or may copy text too slowly to make sense of it.

How could better decisions be made for problems such as the preceding? How could classroom time be used to enable basic skills acquisition? Staff who work in government offices and donor agencies often have no clear answers. Many have varying academic backgrounds, from literature to economics, and may have only their own schooling experience as a frame of reference. They may thus recommend general ideas such as "redefining goals and targets, curricular design and content, educational methods and classrooms, partnerships to address equity and inclusion." Some documents even refer to classroom instruction as a "black box." International organizations that offer plentiful advice on financing and organizational matters have been reticent about instruction. In absence of relevant knowledge, donor strategies focus on peripheral factors. For example, the World Bank's (2011) "Learning for All" strategy focuses on making school authorities autonomous and accountable in expectations that they will find means for teaching students efficiently.

As a result of such processes, instructional strategies are often viewed as details and are left up to the discretion of teachers and local authorities. It is they who ultimately determine the effectiveness of billions of dollars in aid. However, many teachers are not qualified enough to create and execute effective instructional strategies. In the lowest income countries, they may have the equivalent of a fourth-grade education. Efforts to train them based on techniques imported from high-resource countries have been unsuccessful (Craig, Kraft, & du Plessis, 1998).

Due to a multiplicity of languages, instruction in many countries takes place in English, French, or Portuguese. These languages, along with their complex spelling systems, must be learned during class. Teacher absenteeism is often around 20%; overall, less than half of the allocated instructional time may be used for instruction (e.g., Abadzi, 2006, Schuh Moore, DeStefano, & Adelman, 2009). Parents are often illiterate and cannot help their children. Textbooks are usually imported, so they tend to be expensive and scarce. Thus, students may spend the majority of class time copying incomprehensible texts from the blackboard. In addition, students face a host of obstacles known to compromise learning, such as malnutrition and infectious diseases (Grantham-McGregor et al., 2007).

It is not surprising, therefore, that students who entered school at great expense often fail to attain even minimal competencies (Filmer, Hasan, & Pritchett, 2006; UNESCO, 2005). Reading fluency tests in the primary grades show that in some countries 90% of the students cannot read even individual letters (Research Triangle Institute [RTI], 2010a). Many drop out or even graduate illiterate.

Several government and donor staff earned education degrees in higher income countries yet wouldn't necessarily be equipped to provide applicable insights. Those interested in international education often get master's degrees or doctorate degrees in fields such as policy, finance, educational sociology, adult education, or comparative education. These programs often focus on topics peripheral to learning; students may not be required to take any courses in instructional methodology and learning principles or to obtain teaching experience.[1] Graduates who are hired for positions of "education specialists" in fact may have little specialized knowledge. They may recommend a child-friendly classroom climate, innovative methods, constructivist classrooms where students do not memorize, individualized instruction despite class sizes. Citizens of low-income countries who receive advanced degrees from education faculties of Europe or the United States may give poor advice to their governments. They may espouse policies that are unrealistic for low-income students, such as whole-language Grade 1 textbooks.

In some respects, the idealist suggestions of donor staff are not surprising. In higher income countries, the educational services are usually of sufficient quantity and quality to help even low performers acquire basic skills. Children helped by middle-class parents can carry out complex tasks such as reading acquisition by whole-language approach. In poorer countries, however, the initial deficits are large. Many children start school without having seen a book or held a pencil, and they may have limited vocabularies even in their own languages (e.g., Hart & Risley, 1995; Paxson & Schady, 2005).

Imagine, therefore, a Grade 1 in a semirural area of a low-income country. Due to absenteeism and need to fit multiple shifts, the students will get only 20% of the instructional time given to first graders in higher income countries. The students have slates for writing but no textbooks. The teacher has learned from long experience to interact mainly with the few best students who can retain large chunks of information with limited exposure (Abadzi & Llambiri, 2011). What changes are feasible to get as many literate students as possible? Government officials could potentially act on a few clear pieces of advice, but which ones would give the greatest benefit?

One way of setting priorities practically is to consider human cognition. Memory evolved to help organisms survive over the millennia, so humans from Laos to Argentina are genetically set to retain and organize information through the same general processes (Huitt, 2003). The cognitive commonalities are most evident at the more basic stages of information processing:

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[1] For example, the background information for the master's degree in international and comparative education of Stanford University stated in 2011: "Students in the program examine educational policy issues in an international context. Working closely with professors from a variety of disciplines, they study such problems as educational planning in comparative perspective, the dynamic relationship between school and community, equity and education, and the political economy of underdevelopment" (http://ed.stanford.edu/academics/masters).

visual perception and discrimination, encoding, recall, retrieval, and use of information. A chain of causality based on this body of research would predict likely outcomes for various classroom events and provide insights about making instructional methods more efficient.

This causal chain is derived from cognitive science (or cognitive neuroscience).[2] Teaching humans in the ways they were set up to learn may help deliver education to the poor more efficiently and thus minimize the limitations of low-income school systems. Curricula, textbooks, teacher training, and educational policies could be designed on the basis of this causal chain.

However, this domain of knowledge is little known outside psychology departments. Education faculties rarely teach it, and few educational psychology textbooks emphasize memory and perceptual functions (e.g., Davis, Sumara, & Luce-Kapler, 2007). There have been some exemplary efforts in applying the relevant knowledge to schools (e.g., Mayer, 2010; Rosenshine, 2006), but these have focused on skill levels found in high-income countries. With increased sophistication in these countries, cognitive psychology applications have been viewed as somewhat simplistic. But for other populations they may be just right. To serve the poorest beneficiaries of the Education for All initiative, there is a need to better understand the available research and adapt its implications to the poorer populations. This article discusses the main concepts, needs, and potential opportunities for future research that may improve outcomes for low-income countries.

COGNITIVE SCIENCE RESEARCH APPLICABLE TO EARLY-GRADE BASIC SKILLS

The psychology concepts most useful for guiding instructional policies in low-income countries pertain to fairly basic functions: *perceptual learning, working memory capacity, feedback,* and *the chunking process* that packages related concepts together. Some uses of priority cognitive principles are outlined next.

The most important area where learning falters early is *reading*. Although seemingly elementary, the underlying cognitive neuroscience is definitely complex. Reading relies on a face recognition system. This has strict neurological requirements involving reactions in milliseconds, and these must be met before comprehension becomes possible.

Students must first learn to detect and discriminate among multiple letter features. Recognition is greatly facilitated when features are few and when they conform to critical space and size recommendations (Pelli, Burns, Farell, & Moore-Page, 2006). The need to learn a few individual features and discriminate them from others is one reason why progressively presented synthetic phonics teaches basic reading efficiently in English and in other languages (see a review of various studies in Share, 2008).

Practice results in rapid visual adaptation; some distinctions may only require a total of 2 hr of exposure (Hussain, Sekuler, & Bennett, 2011). Students in higher income countries rapidly learn skills such as discrimination of script features, but in low-income countries where prior exposure to writing is limited, there is a need for explicit practice (Abadzi, 2006, 2008). However, textbooks are often scarce, and students get reading practice only from the blackboard. The blackboards may be small and scratched, and those sitting at some distance may not perceive letters as distinct entities or learn how to differentiate among them (Pelli & Farell, 1999). Typically the teacher writes a few words or a sentence and calls upon individual students to read before the rest of the class repeats in a chorus. After a few runs, however, children memorize the auditory sequence of the words and may repeat without knowing any of the letters.

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[2] Cognitive psychology is the study of how people perceive, remember, think, speak, and solve problems. Psychologists have been conducting experiments on these topics since the 19th century. The term "cognitive science" often refers to interdisciplinary research on the mind and mental processes. The term "cognitive neuroscience" refers to research on brain states which directly correlate with mental states (Sun, 2008); for such research, neuroimaging methods are used.

A visitor who changes the order of the words may find that only two or three students in the class can in fact decode them. Only the better off or brightest can learn with so little input; therefore, teachers tend to interact with just those few children able to retain large chunks easily. The rest of the class may be ignored, and they may gradually drop out of school altogether (Abadzi & Llambiri, 2011; Llambiri, 2004). Unfortunately, staff of donor agencies who visit such classrooms often have limited insight of these issues, so they may merely state that students should not memorize.

To make sense of text, students must first read it fast enough to fit it in their working memory. Practice helps *chunk* letters together and reduces reaction time (Miller, 1956). Eventually, the visual word form is activated; this is a part in the brain that facilitates the recognition of entire words (Shaywitz, 2003). The speed increases, sorting significant amounts of text into working memory. The relationship between speed and comprehension has been documented repeatedly (Breznitz, 1997; Laberge & Samuels, 1974, Snow, Burns, & Griffin, 1998), but without an understanding of working memory functions, educators may not see why it matters. As a result, some Grade 1 reading programs in low-income countries aim to teach comprehension through text interpretation rather than practice for increased speed. Yet research supporting speed has been available for at least 15 years (Tan & Nicholson, 1997). The reading textbooks that are procured tend to have large colorful pictures and small amounts of text. So, low-income children are expected to guess word spellings from pictures and rapidly automatize the large batches of letters. Even in well-resourced countries like Brazil, those who cannot may remain functionally illiterate for years while surrounded by beautiful books (OED, 2002). They may manage to decipher text only in Grade 4 and for years may read too slowly to make sense of sentences within the capacity of their working memory. Thus, they cannot answer many comprehension questions and cannot learn much information from texts (e.g., RTI, 2010b).

Insights about working memory lead to a realization that basic skills must be executed rapidly (Cooper & Sweller, 1987). The intertwined concepts of chunking and automaticity are crucial in understanding how to teach these students. Basic skills must be practiced to fluency, so that students can carry out the steps needed to process text, solve problems, or write ideas without thinking about them too much. Longer and complex chains of skills can only be developed after smaller chains have been formed through practice and use (Keele, 2005; Schmidt & Lee, 2005).

The incremental nature of chunking has large-scale implications. Typically, governments and donors expect students to acquire flexible “21st-century skills” (World Bank, 2010), such as reading and understanding text quickly, calculating quickly, rapidly adapting at a job, and learning the necessary new content. However, years of learning and practice are needed to form and automatize the simpler components, and no easy shortcuts are known. Ignorance about the progressive size of information chunks leads to unrealistic expectations about students’ capacity to learn from complex methods and scant practice.

Because many students inevitably fail, governments must deal with extensive grade repetition. Automatic promotion is frequently recommended as a policy, but will promoted students master the prerequisites just by being exposed to more advanced topics? To be remembered, items must be laid into a bed of closely matching information (Katona, 1940, p. 162). Further, the path followed when information is encoded must also be used when information must be retrieved (Reisberg, 2009). Broadly, the research implies that kids promoted automatically to the next grade usually cannot learn what they missed without extra help. Remediation is needed, but tutoring is a private cost (Bray, 2007). Unfortunately, governments and donors rarely finance public remediation programs. The causal chain implies that remediation would be a priority strategy in lieu of automatic promotion. Structured programs during evening hours or vacations, potentially using older students, could enable more students to perform.

Efficient teacher training could resolve many instructional problems. However, teachers in lower income countries often fail to improve classroom practices, despite massive investment in in-service training by donor agencies (Craig et al., 1998). Cognitive research would predict that teacher practices may not show long-term improvement after a dense 3-day course at a teacher training center. Content is encoded partly through environmental cues, so when teachers return to their classrooms, it may become a vague memory (*state-dependent learning*; Marian & Kaushanskaya, 2007). Also, long-term retention is based on distributive learning and review over a considerably long period (*spaced learning*; Pashler, Rohrer, & Cepeda, 2007). Thus when teachers go home and stop reviewing new concepts, work urgencies may overpower the memory of training course content. Trying to bring content into working memory while doing many other tasks in class may result in *cognitive overload* (Feldon, 2007). Efficient training of teachers who have limited education could include *observational learning* research. Behavioral sequences would be automatized, and they would more likely to be executed if shown explicitly. Visualization research also suggests benefits if teachers are asked to visualize the desired behaviors if they were carrying them out inside the classroom (Dowrick, 2011; Liu & Park, 2004; Wright & Smith, 2009). Thus, video clips of the desired behaviors may prove a potent tool for the training of teachers with limited education. Preliminary tryouts have started in countries such as Liberia, and a methodology is under development.

One obstacle to improvement is a limited insight on how people learn. Learning is often viewed as abstract and amorphous, without clear principles for its formation (e.g., Pigozzi, 2010). This is why the network-based structure of memory has considerable explanatory power. The semantic and propositional networks illustrate how pieces of information are linked (e.g., Collins & Quillian, 1969). Important factors that determine whether information will be retained and retrieved on various occasions include elaboration activities (a concept that partly overlaps with "active learning") and the transformation of knowledge from superficial encoding to the "deep" structures that may lead to critical thinking (see Reisberg, 2009, for a review). Thus, knowledge can be shown to consist of relatively concrete (albeit very complex) nodes of information tied by links on the basis of some "rules." Classroom activities can create, strengthen, modify, or erase the links. Donor and government staff can get a sense of how knowledge is constructed and modified[3] by gaining a better understanding of such knowledge.

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[3] Connectionist networks could be used to simulate instructional conditions in low-income classrooms and estimate educational outcomes, but this topic is beyond the scope of this article.

The network-based nature of memory also helps define "quality of education." This term is used daily in donor and government planning documents, but its definition has been elusive. For example, an unpublished donor strategy document in 2009 defined quality as something that "unleashes the natural capacities of living beings to learn" while further stating that "good learning contexts enable quality learning, and bad learning contexts do not." However, cognitive network concepts can again come to the educationists' rescue. "Low-quality" schools often teach a small amount of information, mainly memorized in series with limited connections to other knowledge; thus the students may retrieve the items only through direct questions about them. By contrast, "high-quality" schools teach more items, help attach them to multiple parts of the network, and give reasoning activities that result in new conclusions. The result is students with dense and connected knowledge networks, whose knowledge is retrieved through multiple paths and manifests quickly when needed. These students tend to score well in achievement tests and can perform in the labor market. With additional research, quality can be operationally defined and measured as a composite variable.

The information-processing line of reasoning, therefore, has policy implications for governments and donor agencies. It may focus vague and complex plans into a few relatively specific goals: speed and automaticity in basic skills, textbook acquisition for all students to maximize practice, measures to optimize use of instructional time, student remediation at public expense, and greater reliance on observational learning methods for teacher and supervisor training. Some implications seem to be common sense, but others, such as reading speed, may be counterintuitive. Low-income governments have limited implementation capacity, but many receive strong donor support and are undertaking multiple initiatives. They are often willing to listen.

The challenge, therefore, is to convince education staff to promote policies consistent with the information-processing chain of causality rather than policies promoted with little evidence. As the next section shows, this is not an easy undertaking.

CHALLENGES IN USING COGNITIVE SCIENCE FOR EDUCATION POLICY GUIDANCE

Most of the concepts used to clarify the problems of lower income classrooms are old. They were developed in the 1940s to 1980s and are found in undergraduate cognitive psychology textbooks. However, they have been hard to recognize and use because they do not stand out among the topics covered in those treatises. For example, chunking often gets only a passing mention. To some extent this is not surprising; cognitive psychology textbooks must be relevant to the realities of students who take the courses, so they tend to emphasize topics pertinent to more complex cognition. As a result, however, there is little organized content to teach university students about the essential cognitive concepts pertinent to millions of low-income students. Even graduates of psychology programs may have a limited understanding of these or know how to apply them.

A related problem about some of these building-block variables (such as chunking or state-dependent learning) is limited research in educational paradigms (chunking has been studied more in procedural learning; Schmidt & Lee, 2005). Thus, relevant benchmarks are unknown. Automaticity in reading has been researched in conjunction with the visual word form activation (McCandliss, Cohen, & Dehaene, 2003; Shaywitz, 2003), but there is little research to specify how and when automaticity is attained for skills such as calculations.

Another obstacle in the use of cognitive research concerns the vocabulary available to express various concepts. The terminology has evolved over time without a clear direction, and some concepts seem minimally different from others. For example, there is short-term memory and working memory; generative learning (Soraci, Carlin, Toglia, Chechile, & Neuschatz, 2003) and Paulo Freire's (1973) generative words; there are neural networks, associative networks, connectionist networks, memory nets and cognitive networks; and there is cognitive psychology versus cognitive science and cognitive neuroscience. Furthermore, some cognitive concepts used often in education have no suitable names. For example, it is clear from research (e.g., Katona, 1940) that to retain information, there should be preexisting closely matching items that would serve as "hooks." A partially fitting term seems to be Vygotsky's "zones of proximal development," which could be adapted as "nodes of proximal encoding." The overlapping and unclear terms confuse staff who have little knowledge of the discipline and diminish the chances that they will devote time to learn the material.

THE CHALLENGES OF KNOWLEDGE TRANSFER TO THE EDUCATION SECTOR

The limited learning outcomes in countries that receive donor aid raise pressures for accountability. For example, an audit of the effectiveness of the British bilateral aid (Department for International Development, 2010) showed a limited impact of donor financing and recommended aid reductions. Some organizations, like the Center for Global Development, urge donors to stop financing mere inputs and expect results first.

Departments that prepare students for international education work ought to respond to this crisis. The concepts and implications discussed in this article could be discussed more broadly among education scholars and partnerships could be sought with interested psychologists. However, faculty of the two disciplines rarely collaborate (Ansari & Coch, 2006; Dempster, 1988; Metcalfe, 2006; Ronstadt & Yellin, 2010). So, changes to education faculty curricula have been limited. Several universities in the United States teach educational neuroscience, but the relevance of the research to low-income countries thus far has been limited.

To some extent, philosophical orientation may raise barriers. Some education professors may espouse beliefs that run counter to cognitive research findings. For example, constructivists may expect that children will construct knowledge networks but give little thought to the conditions needed for this to happen (Kirschner, Sweller, & Clark, 2006). High-income countries place great emphasis on individualized attention, cultural particularities, and the special status of every person. The author has often heard statements that everyone learns in his or her own way, that there are many models of learning, and that universal guidelines for learning do not exist. Learning topics may still be considered "theories of learning," a 1960s term that implies that the concepts are merely beliefs. Relevant research may even be considered deterministic or "Skinnerian." As a result, the neurocognitive commonalities that could predict how to teach the very poor effectively may be found unappealing and could be ignored.

One added difficulty is limited background knowledge that may help academics follow cognitive research, retain details, and interpret findings for students. The author has conducted many training events for education professionals of donors and governments for more than 10 years and has experienced the difficulties of teaching this material. Some participants seem rather baffled by working memory and automaticity implications; they tend to rely on generic explanations from their experiences and to overlook inconsistencies. They may entertain the new concepts for a brief period and quickly return to their usual decision algorithms. Changing the decision algorithms of adults who have used different concepts for a long time is in itself a significant challenge that requires research from a cognitive and social standpoint (Shtulman & Valcarcel, 2012).

The limited engagement by faculty ultimately penalizes the students who take their courses. Graduate students spend years studying and passing tests on the terminology and concepts used by the great educators of the past, such as John Dewey, Jean Piaget, or Lev Vygotsky, and learn to reason about learning through concepts of the early 20th century. The students may also have limited understanding of hypothesis formation and testing. Many ask for jobs, but during interviews with the author, some have stated that there is no relationship between halting reading and a lack of comprehension, or that whole-language textbooks in French are appropriate for countries like Burkina Faso. Others may confidently state that the best way to teach children is through play but have no explanation or knowledge of relevant research. Thus many recent PhDs of departments such as educational policy, adult education, or international education seem *unqualified* to make valid decisions on issues affecting millions of children in a country.

What actions can be taken to help donor and government staff use the learning research pertinent to international education settings? First, the research and its implications must be taught through one or more courses that could be termed "cognitive neuroscience of basic skills." These could be graduate courses aimed at future staff of donor and government agencies but also undergraduate courses aimed at future teachers. Some of the pertinent material can be found in the author's book *Efficient Learning for the Poor* (Abadzi, 2006), but science evolves and updates are needed. Faculties of education must define the relevant content and closely monitor the evolving research.

For staff already working in the education sector, persuasive and thoughtful training is needed, aimed at providing answers to the problems they face. One way to convince participants of the utility of learning research is to juxtapose the decisions made with and without it. Attractive publications and e-courses could be aimed at international audiences and at teacher trainers with modest levels of education. E-courses could include animated graphics and video clips from relevant classrooms. Concepts must be "popularized." For example, memory functions can be depicted as a large bottle with a narrow neck in lieu of complex diagrams; chunking processes could be presented as railcars being connected into long chains, and cognitive networks could be depicted as LEGO blocks that can be manipulated. There may be trade-offs between precision and popularization, but the advantages could be considerable.

There is also a need for extensive research into the learning issues encountered in low-income countries. The studies often cited to elucidate the education of the poor are used in a translational context, and various parameters must be verified. Other topics require study, such as the minimum number of instructional hours that governments must ensure for the acquisition of reading automaticity in various languages and scripts. In principle, funding can be available from bilateral agencies and foundations that specialize in the education of the poor.

In conclusion, an information-processing framework may greatly help understand the reasons for low performance in low-income countries. It may also help determine which policies are likely to promote basic skills acquisition. Many of the concepts involved are not new, but they are relatively unknown and are sometimes difficult to communicate to the public. Adapting the terminology presents challenges, but these are worth pursuing.

Insights from educational theory and practice have reached their limits in low-resource environments. Inspiration from common sense also seems to be waning. Surely Lev Vygotsky, John Dewey, Jean Piaget, or Paulo Freire would encourage the use of research that would benefit the poor. Quality of education and rights to education for all are really based on dense and well-connected networks of knowledge, with automatized basic skills.

AUTHOR BIO

Helen Abadzi is a Greek psychologist and polyglot. She was a senior education specialist at the World Bank for 27 years and retired in August 2013. She explores cognitive science applications that may improve the education of the poor. Her work raised early-grade reading fluency into an international priority.

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Acting and Reacting: Youth's Behavior in Corrupt Educational Settings

Amra Sabic-El-Rayess
Columbia University

With its broader employability to the issues of underperformance that may emerge in educational systems internationally, this empirical study redefines and expands Albert Hirschman's theory of voice, exit, and loyalty within higher education. The article formulates a new education-embedded theoretical framework that explains reactionary behaviors of students in corrupt educational systems. The new corruption coping theory defines a set of coping mechanisms that students employ in reaction to failing institutions. Relying on the survey data collected from 762 students and interview-based data from 15 purposely sampled current students or recent graduates of the public higher education institutions in Bosnia and Herzegovina, the study reinterprets the voice mechanism that Hirschman sees as a political tool capable of bringing about change within underperforming institutions as, ironically, severely diminished in its power when observed within a corrupt environment. This research similarly differentiates amongst various types of exit and finds that Bosnian students often react in ways not predicted by Hirschman's model, leading to the emergence of a novel corruption coping theory presented in this study.

INTRODUCTION

An interest in the topic of educational corruption has grown among both practitioners and academics, promoting each to research corruption and its impact in the developing as well as the developed world. In recent decades, the World Bank and other international organizations have labeled corruption as one of the key barriers to the sustainable development of poor nations. This phenomenon weighs more heavily on the weaker states than the developed nations. In the latter, instances of corruption are often resolved and those responsible are sanctioned, if and when discovered. The analysis that follows narrows its focus to understanding students' corruption coping mechanisms in Bosnia and Herzegovina's[1] higher education, and adopts Heyneman's (2004) definition of corruption as "the abuse of authority for personal as well as material gain" (p. 637).

A derivative of broader research conducted on students' perceptions of corruption, social mobility, EU-nionization,[2] and their coping mechanisms, this article presents select findings on

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[1] *Bosnia and Herzegovina* and *Bosnia* are used interchangeably.

[2] The term *EU-nionization* was coined by Sabic-El-Rayess (2009) and "refers to a set of political, social, cultural, and educational forces that are tasked with synchronizing the family of European societies" (p. 427).

Correspondence should be sent to Amra Sabic-El-Rayess, Department of International and Transcultural Studies, Teachers College, Columbia University, New York, NY 10027. E-mail: as2169@columbia.edu

students coping with corruption in Bosnian higher education. The broader study applied concurrent mixed methods, combining the binary logistic regression and content analysis as appropriate. A studied sample was drawn from a population of Bosnia's students attending public faculties: The sample comprised 762 students from six public faculties and 15 interviewed participants who either recently graduated or are currently studying at the public faculties in Bosnia.

Emphasizing students' ability to cope with exposure to educational corruption, I employ and expand on Hirschman's (1970) theory of voice, exit, and loyalty within organizations. By extending this theoretical framework into the educational milieu and contextualizing it within a corrupt setting, the study captures and systematically analyzes reactions of stakeholders to the failing organizations: in this case, reactions of Bosnia's students to corrupt universities. According to Hirschman, there are two responses to the deteriorating performance: the firm's clientele will either opt to "exit" their institutional relationship or "voice" their dissatisfaction with the failing organization (p. 4). Although claims of widespread corruption within Bosnia's higher education are frequently made, little scholarly research analyzes how youth navigate through the corrupt educational milieus. This study, therefore, aims at formulating the corruption coping theory that models the behaviors of Bosnia's youth who are encountering corruption.

BACKGROUND: CORRUPTION IN BOSNIA AND HERZEGOVINA'S HIGHER EDUCATION

Characterized by a complex governing structure and international dependency, postwar Bosnia continues to face a vast array of challenges, including broad societal corruption. According to Transparency International (2004), only 10% of the sampled population in the Federation[3] believes that corruption was significantly present in the prewar period, whereas 20% of the sample from the Serb Republic thinks that corruption was notably present during the same period. However, Transparency International indicated that, in 2002, a much higher proportion, 85%, of the surveyed population in the Federation perceived corruption as significantly present in the postwar period, whereas more than 90% of those surveyed in the Serb Republic concurred. According to Chapman (2002), 38% of Bosnia's students indicated that corruption was widespread among university professors.

Over the years, Transparency International B&H has played a key role in evaluating the state of corruption within Bosnia's universities. Using a representative sample of 500 students from the University of Sarajevo, Transparency International B&H found that 60.2% of the sample thought "that there is a great presence of corruption at the University [of Sarajevo]" (Knezevic, 2005). Although Bosnia formed the Agency for Prevention and Coordination of the Fight Against Corruption, its head, Sead Lisak, has indicated that Bosnia is dealing with a broader societal problem as Bosnians "bribe even for a 'good' cemetery location" (MagazinPlus, 2011). Systemic corruption negatively impacts development, and its economic implications are significant in the arena of education as well, especially as they relate to educational costs and rates of return on higher education (Heyneman, 2010, 2011).

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[3] Dayton Peace Accord of 1995 split the country into two ethnic entities: The Federation of Bosnia and Herzegovina (51% of the territory) was given to Bosniaks (Bosnian Moslems) and Croats, whereas Serb Republic (49% of the territory) was given to Serbs.

METHODOLOGICAL APPROACH AND SAMPLING

Mixed-Methods Approach

The study used the concurrent mixed methods, collecting data both by surveying and interviewing students at Bosnia's public faculties on their perceptions of corruption and their corruption coping mechanisms. Informed by a pragmatic worldview (Creswell, 2009), I draw on theoretical frameworks and analytical tools that optimize my research inquiry. In analyzing data collected via interviews, the broader study applied the content analysis by reducing detailed interview-based data to relevant themes and looking for concept repetition. The study also relied on survey-based data to uncover current trends in students' behaviors and perceptions within corrupt higher education in Bosnia. Where pertinent, the broader research applied the binary logistic regression; however, the findings on corruption coping mechanisms presented herein did not warrant regression analysis and primarily rely on the interview-enhanced descriptive analytics extracted from the survey-based data.

Sampling Process

According to Bosnia and Herzegovina's last prewar census of 1991, the country's population totaled 4,377,033, of which 3.7%, or 122,967 individuals, were college educated. A politically contentious and first postwar census is currently ongoing, so the exact number of those attending and later graduating from both private and public colleges remains unknown as of October 2013. Even though the private universities and colleges often came up during the interviews with students, the focus of this research is on Bosnia's public higher education as public institutions play a central role in educating new generations of Bosnians.

There are eight public universities and an unknown number of unregulated and unaccredited private institutions of higher education in Bosnia. Each university consists of multiple faculties that operate fairly independently from the university itself. This study surveyed current students from six public faculties and interviewed either current students or recent graduates from a similarly diverse group of public faculties. The sample was collected only at the institutions that allowed their student populations to be surveyed. Of the approached faculties, two ultimately declined to participate in the survey process despite their initial commitment to engage. This could have impacted the survey findings, but such claim cannot be asserted in the absence of the actual data from those faculties.

Of the surveyed sample, 366 students (48.0% of the sample) were 1st-year students, 251 students (32.9% of the sample) were in the 2nd year of their studies, 89 students (11.7% of the sample) were 3rd-year students, 51 students (6.7% of the sample) were seniors, and five students (0.7% of the sample) were of unknown status. Further, 64% of the participants were female, 2% did not indicate what their gender was, and the rest were male. The interview-based data were obtained via extreme-case sampling from the circle of individuals known to the researcher. Although representativeness of the studied student population was unattainable using purposeful sample selection, this research benefited from the in-depth data collected from those willing to speak openly on educational corruption.

THEORETICAL FRAMEWORK: EXIT, VOICE, AND LOYALTY

A continuous exposure to the lack of merit associated with educational corruption produces complex behaviors and reactions among youth. Heyneman, Anderson, and Nuraliyeva (2007) wrote a seminal piece on the costs of educational corruption. In the process, they evaluated the perceptions of corruption in higher education in several countries of Central Asia and Europe, noting that students, at times, depicted corruption as a "norm" (p. 5). It is precisely when educational corruption becomes ingrained into the educational system that students' behaviors change and reflect pressures of a corrupt setting.

Drawing on Hirschman's (1970) renowned work on exit, voice, and loyalty seems particularly valuable here. For Hirschman, institutions have temporary performance deviations that are "lapses from efficient, rational, law-abiding, virtuous, or otherwise functional behavior" (p. 4). This definition includes actions that may be deemed illegal, potentially allowing for the inclusion of corruption and other forms of outlawed business behavior (Hirschman, 1970). However, Hirschman did not elaborate on such forms of performance deviations and instead focused on quality and efficiency problems that, in his view, are "repairable lapses" (p. 4). For Hirschman, a perfect institution does not exist, and all institutional players may regress at some point in time, but mechanisms of a competitive market help them rebound.

According to Hirschman (1970), customers of the businesses that begin to underperform react to such changes in one of the two ways. Exit is a reaction with economic implications as it correlates with the company's declining revenues, unless demand is inelastic and the price increase can compensate for the revenues lost due to some customers' exit (Hirschman, 1970). Hirschman saw voice as a political act that ranges from simple complaints to massive public protests. Revisiting Hirschman's work, Klein (1980) looked into the notions of voice and exit, and noted that the model of reacting through exit or voice is not sufficiently elaborate.

Specifically, Klein (1980) questioned Hirschman's (1970) assumption of mutually exclusive exit and voice mechanisms and pointed out that human behavior tends to be characterized by political apathy rather than activism. In addition, Klein underscored that voice explains why consumers are dissatisfied, whereas exit—often in the form of a simple and abrupt departure—does not elaborate on why the customers may be leaving. For Hirschman, whether customers opt to exit or voice their displeasure is ultimately a function of the level of loyalty the customers feel toward the company: More loyal customers will complain but remain with the company, whereas others will exit. There is a possibility that dissatisfied consumers choose neither to exit nor to voice their views; for critical Klein, this is the situation Hirschman explained by resorting to the notion of loyalty. There may also be multiple transaction costs impacting decisions whether to exit; the area of transaction costs has been a focus of Williamson (1981), who believes that a long-term relationship with a business counterpart will, eventually, affect the structure of the business deal.

In education, various factors clearly complicate the exit mechanisms or ways in which students choose to cope. Impact on price of schooling is an important consideration, as students may exit because of the increased cost of education. The motivating factor for exit then would not be educational corruption per se but an increase in the price of education due to bribery. When the price of a particular service increases due to a bribe, the poor are more likely to exit relative to the wealthier segments of the population. This phenomenon has been studied by Heller (2001): He finds that providing financial aid to the poor may help overcome "the existing low-tuition and fees [that can] still act as a barrier to college enrollment" (p. 30). When contextualized to the Bosnian educational sector, the poorest students may be—similar to what Kaufmann, Montoriol-Garriga, and Recanatini (2008) saw occurring in the broader public sector—opting out of the corrupt educational system because of their inability to address continuous exposure to and demands of corruption. Others, however, may simply adjust to paying the higher price, especially if no viable alternatives exist.

The public universities in developing countries often function without regard for the presence of private competition and operate under the presumption of perpetual existence. Herein, Hirschman (1970) argued, politically active students would prove beneficial to the system of public education, as opposed to those exiting. Of interest, Klein (1980) disputed Hirschman's "assumption of producer responsiveness" (p. 417). For Klein, Hirschman disregarded the issue of "professional dominance" of various institutions, a trait that perpetuates institutional confidence (p. 417). Existing research on educational corruption rarely explores the intricate relationship of corruption and students' reactionary mechanisms to systemic corrupt behaviors, which is why the next section employs Hirschman's work to pursue the topic in depth and within the context of Bosnia's higher education.

EXIT, VOICE, AND LOYALTY REDEFINED: NEW CORRUPTION COPING MODEL

Many insights shared in Hirschman's (1970) work on exit and voice are invaluable in analyzing the Bosnian students' various forms of exit from higher education, their intent to remain loyal to the corrupt system, and ways of voicing their dissatisfaction with educational corruption. Hirschman viewed customers as either "alert" or "inert," where complaints by "alert" customers give a firm an incentive to improve its performance, whereas the "inert" customers remain loyal and allow the firm to rectify any issues on its own (p. 24). An expectation that a firm's failure leads to an immediate exit relies on an assumption that a firm's client can easily find a comparable substitute; however, as Hirschman pointed out, the customer does not always exit and may give the failing firm "some latitude as both price-maker and quality-maker—and therefore, in the latter capacity, also as a quality-spoiler" (p. 21). In the educational sector, an individual may not be willing to transfer to another university or voice his or her dissatisfaction because the transfer may be costly or take too long.

Internal Voice

To better understand manifestations of voice in a corrupt setting, I utilize Hirschman's (1970) framework of voice, exit, and loyalty as an interpretative foundation for a corruption coping model that has emerged in Bosnia's higher education. Ironically, I reinterpret the voice mechanism as severely diminished in its power when situated in a corrupt environment. Within corrupt environments, students often remain passive, and if they voice their dissatisfaction, they do so less aggressively. In fact, types of voice mechanisms in a corrupt setting can be indicative of an

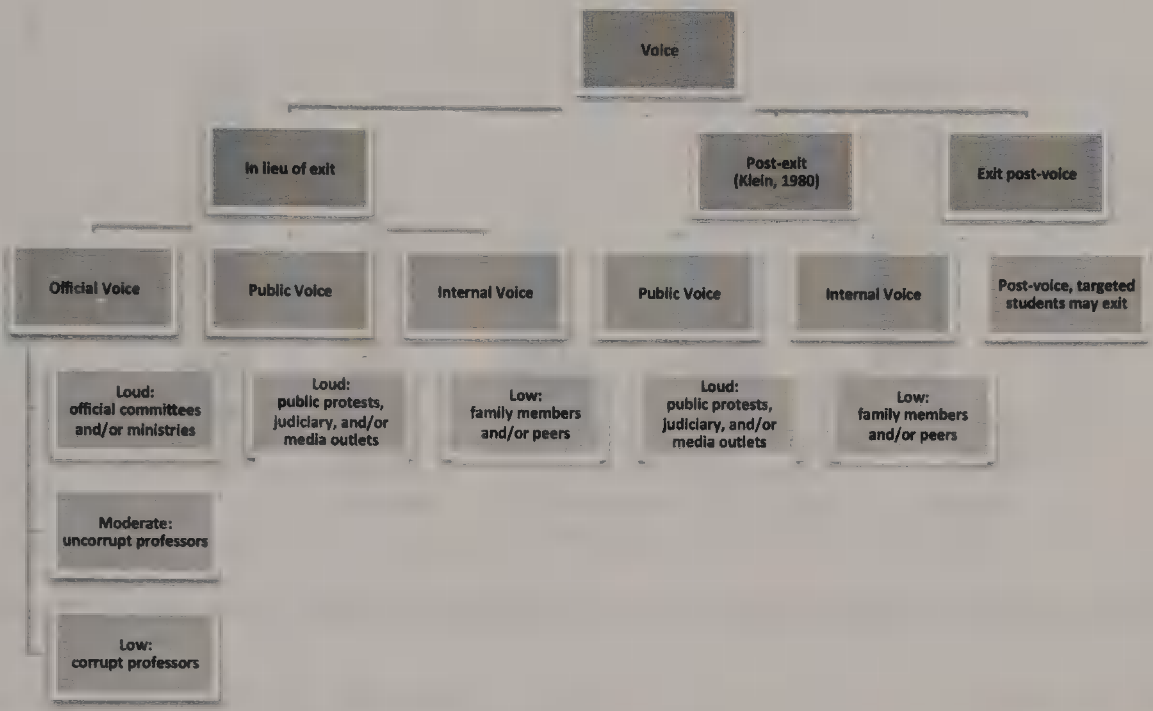
Voice
In lieu of exit
Post-exit (Klein, 1980)
Exit post-voice
Official Voice
Public Voice
Internal Voice
Public Voice
Internal Voice
Post-voice, targeted students may exit
Loud: official committees and/or ministries
Loud: public protests, judiciary, and/or media outlets
Low: family members and/or peers
Loud: public protests, judiciary, and/or media outlets
Low: family members and/or peers
Moderate: uncorrupt professors
Low: corrupt professors

FIGURE 1 Theoretical model for forms of voice. (color figure available online).

unhealthy environment in which students operate. Students may be discouraged by, for instance, a complaint that was dismissed without proper investigation and limited public protests, if any.

As the primary data collected in the course of this research suggests, had it not been for the fear of repercussions, the students' voice would likely be as powerful as Hirschman (1970) would expect it to be. To account for the challenges of a corrupt setting, however, this research devised a new and education-specific corruption coping model with a range of outcomes for the voice variable. Specifically, voice can happen *in lieu of exit, post-exit, and prior to exit* (Figure 1).

When voice occurs *in lieu of exit*, I theorize it can be an *official*, *public*, or *internal voice* (Figure 1). The *official voice* refers to complaints shared with the official university bodies or professors. Whether students decide to complain to the official committees that may be tasked with addressing corruption concerns, uncorrupt professors, or corrupt professors ultimately impacts the form in which voice manifests itself: the *loud*, *moderate*, or *low voice*, respectively. The magnitude of voice, dependent on its potential effectiveness in addressing the institutional deficiencies, is classified as *loud, moderate*, or *low*. Contacting the official bodies within the faculty can result in a *loud voice*, as such reaction is most likely to instigate an official inquiry into the student's complaint and arguably result in a visible attempt to correct the deficient behavior. Although potential for change is greatest with a *loud voice*, substantive change is not a certain outcome. If students fear potential consequences following their complaint, the *loud voice* is an unlikely course of action. Students may also perceive the official committees as institutional posturing rather than effective anticorruption bodies.

This study found that, out of 220 surveyed students, 28.7% of the surveyed sample that admitted they knew someone who had complained, 129 students or 58.6% of the subsample said

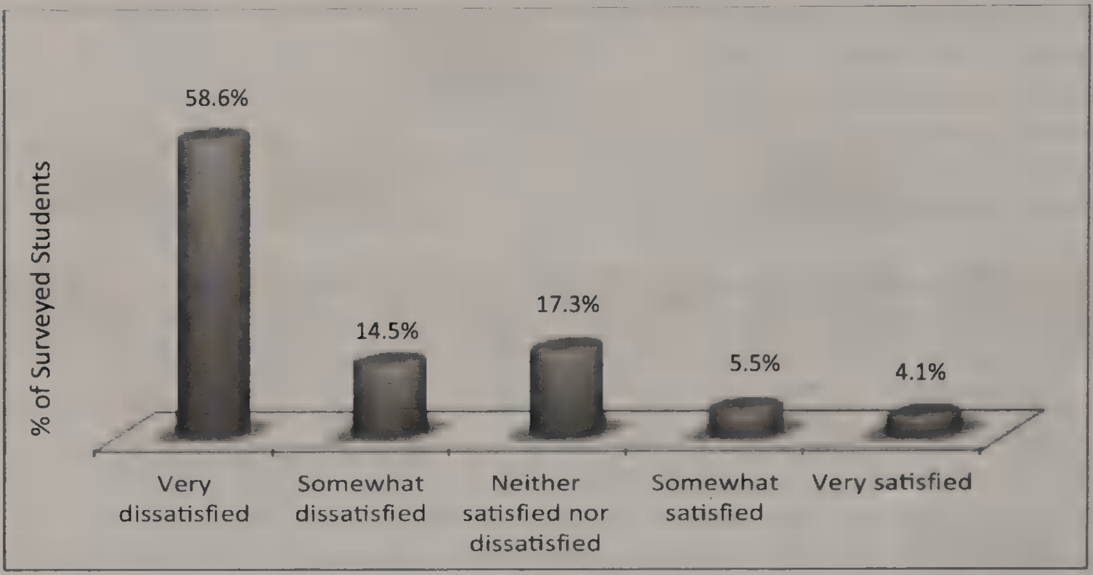

FIGURE 2 Level of student satisfaction after complaining. Source: Student surveys. (color figure available online).

the friend who complained was "very dissatisfied" (Figure 2). Whereas 14.5% stated the friend was "somewhat dissatisfied" and 17.3% were "neither satisfied nor dissatisfied," only 4.1% of the subsample were "very satisfied" with how the complaint was processed (Figure 2). Similarly, 5.5% of the subsample said that the level of satisfaction would best be depicted by "somewhat satisfied" (Figure 2). These findings evidence the lack of effective action resulting from students' voicing of their dissatisfactions with the corrupt institutional framework. The analysis further found that 84.5% of respondents thought there were no committees to which one could voice a complaint, whereas only 11.3% of the surveyed pool was aware of the committees' existence.

Further confirming that the current environment impacts student behavior, a vast majority of students would be inclined, at least to some degree, to voice their dissatisfaction with corruption if they felt they could do so safely. A surprisingly high portion of the surveyed sample, 78.4%, stated that, if they could complain anonymously, they would: Specifically, 35.9% said they would "definitely" complain, 21.9% stated they would "probably" complain, and 20.6% said they would "maybe" complain (Figure 3). However, even if anonymity were secured, 8.1% would not complain, whereas 9.8% were not sure (Figure 3).

Given the potentially unfavorable outcome of reporting corruption, students may be more inclined to express their dissatisfaction by speaking with the uncorrupt professors: a *moderate voice*. Here, the impact is likely moderate due to a limited potential for change relative to the *loud voice*: The power of the uncorrupt faculty over the corrupt professors is especially limited in settings where corruption is systemic. In Bosnia, Tanovic observes (Svevijesti.ba, 2008) that powerful professors are often unqualified yet control institutional access to outside talent. In other words, the likelihood of correction following communication between an uncorrupt faculty member and a student is even less than when the official recourse is taken; therefore, the power of this particular voice is *moderate* at best.

As compared to other forms of voice, students' *low voice* is least effective in changing corruption processes and largely serves as an emotional outlet for students rather than as a

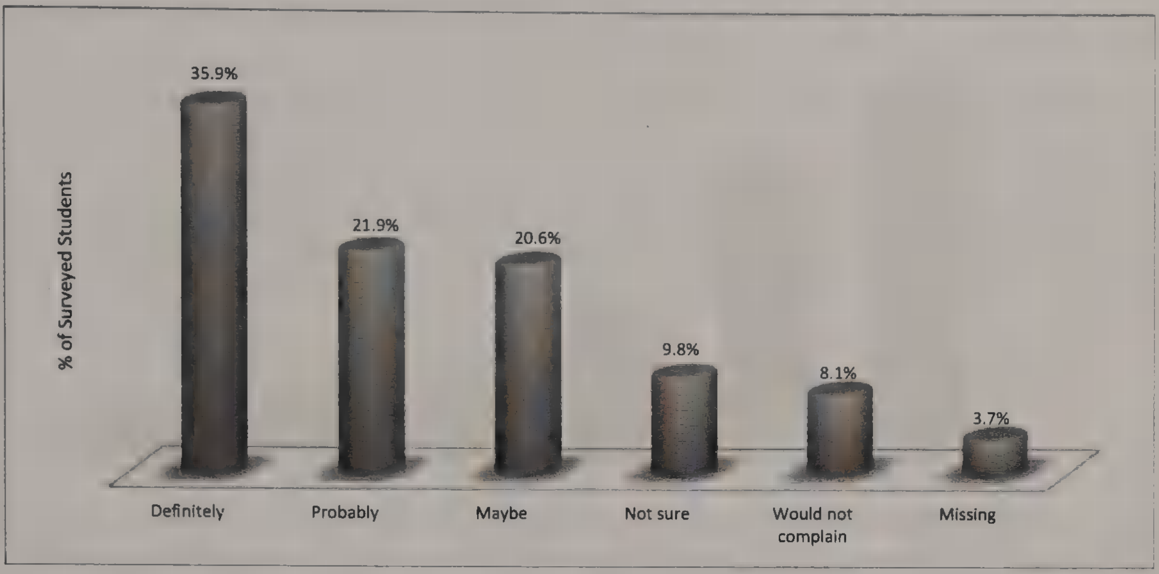

FIGURE 3 Anonymous voice mechanisms. Source: Student surveys. (color figure available online).

corrective and capable tool Hirschman (1970) defined. Voice is *low* when students limit their reaction by informally complaining to a corrupt professor or a powerless staff member, as they are both unlikely to take any action on behalf of the student. Direct complaining to a corrupt professor may in fact result in further repercussions for the student, rather than in a correction of the corrupt behavior that prompted the complaint.

In addition to the *official voice*, there is a *public voice* that often correlates with a highly dissatisfied student body seeking a change (Figure 1). It is synonymous with the voice Hirschman (1970) saw as a political tool. In this corruption coping model, I classify *public voice* as a *loud* response because it has a greater potential to jolt the existing system and lead to a correction of the behavior in question. For instance, dissatisfied but active students may organize public protests—thereby manifesting their *loud voice*—or work with media to openly address corruption. This classification of *public voice* as *loud*, however, does not mean that it will necessarily correct corrupt behaviors. Rather, I argue that, of all reactions a student or group may choose, *public voice* has the greatest potential to instigate a change. This is particularly the case when such protests start occurring on a regular basis as, over time, continuous public pressure can create sufficient momentum forcing the educational officials and political elites to address corruption, in part if not in its entirety.

In *lieu of exit*, students could react with their *internal voice*, which I classify as a *low voice* (Figure 1). When it comes to the *internal voice*, the impact is minimal as this form of voice is limited to complaining to the family members and peers only. Although often widespread among youth, an *internal voice* is powerless within a corrupt institution and, more broadly, within a corrupt system. Such a minimally invasive form of voice can only secure continuation of corruption rather than disrupt the *status quo*.

If *voice post-exit* occurs (Figure 1), it likely manifests itself either as *public voice* or *internal voice*, where public manifestations are typically *loud*; *public voice* occurs through media outlets, public protests, or even court proceedings. Klein (1980) also brought up the possibility of *voice post-exit*. *Internal voice,* however, is of low volume and low impact, as it relies on limited

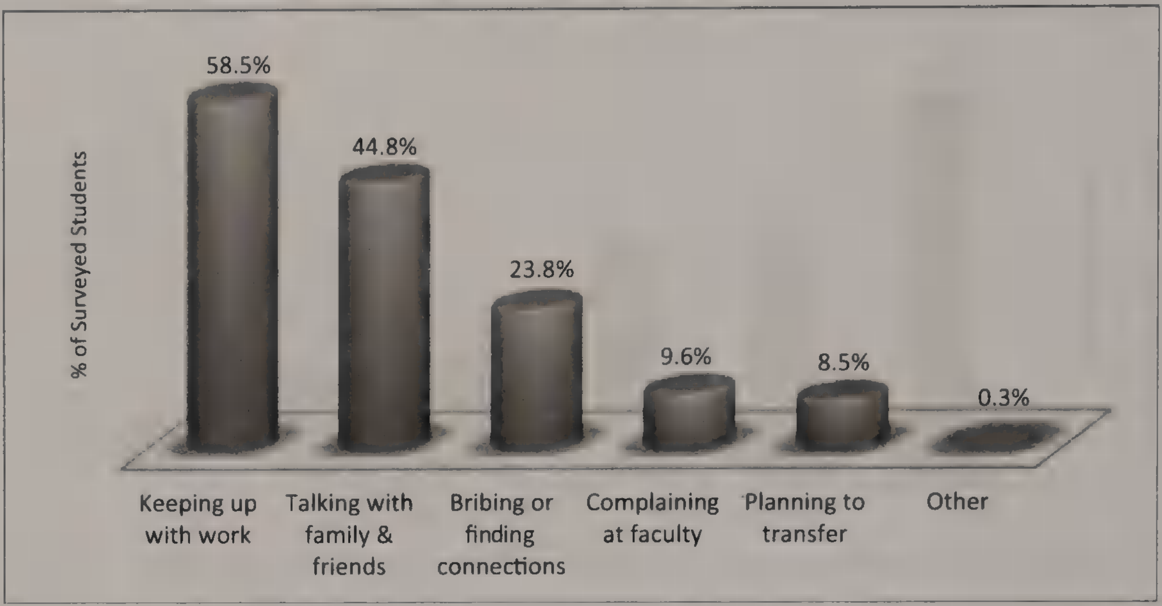

FIGURE 4 Corruption coping mechanisms. Source: Student surveys. (color figure available online).

conversations between students and their family members and peers. *Exit post-voice* can also occur, especially in those cases where the students' concerns remain unaddressed, when a student has been intimidated through the educational process (i.e., repeatedly failed), or when students' activism has led to the faculty pressure on a student (Figure 1).

Corruption in Bosnia's higher education is tolerated, and this tolerance manifests in the students' fear of their faculty's control over their futures. One of the study participants articulated, "Most of the complaints [relating to corruption] were never resolved within the university senate, court or the public. Some processes were started but were never resolved. I do not know a situation where a professor was left without a job because of corruption" (Interviewee 5C). Consequently, 58.5% of the surveyed sample said they cope with corruption by staying passive: "keeping up with the required work" (Figure 4). They simply opt for status quo and no-exit-no-voice strategy.

The next most frequent coping mechanism among surveyed students was the *internal voice*: 44.8% chose "talking with family and friends" over other forms of voice (Figure 4). Fearful of repercussions, Bosnia's youth opt for the *internal voice*: an ineffective tool in substantively changing their circumstances. Although students' *low* and *internal voice* helps them express their frustrations with corruption, *low voice* fails to serve as the corrective tool Hirschman (1970) envisioned it to be. A study participant confirmed that stories of educational corruption are shared "when we [friends] sit down for coffee and then start talking about who bought what [exam]" (Interviewee 7C).

Of interest, 23.8% of the surveyed participants chose to cope by looking for connections or giving bribes: Approximately one in five students in Bosnia's public higher education was seeking connections or ways to bribe professors (Figure 4). This process fundamentally distorts the manner in which students understand and pursue academic and, arguably, professional success. Even the student union, an organization formed to represent the interests of students, rarely uses its voice effectively; instead, students look "after themselves without having a broader perspective"

(Interviewee 3C). When the student union acts, "it is usually for someone's hidden agenda to be achieved through the union" (Interviewee 3C).

The noted hesitance with disclosing one's grievances in a more aggressive and visible form is correlated with a fear of repercussions. Although *loud* and *moderate voices* may lead to an inquiry into the student's complaint, they also increase perceived likelihood for that student's marginalization: "Students are talking but *not loudly* [emphasis added]. No one is courageous to speak up publicly" (Interviewee 1C). Consequently, Bosnian youth continue to opt for the acceptance of corruption and status quo.

Mental Exit

The broader research, of which this article is a part, shows that corruption exists in Bosnia's higher education—with 88.7% of the surveyed participants recognizing corruption as present (Sabic-El-Rayess, 2011, 2013); yet the same students keep the universities in business by appearing to continue to function normally within universities they label as corrupt. The majority of those enrolled drop out of Bosnia's faculties in the 1st year of their studies (Pitkanen, 2008). This study, however, is interested in understanding why those who stay remain indifferent and how they continue to cope with corruption in their faculties. Inertness in Bosnia, this research finds, is occurring due to the extent of educational corruption and the students' realization that their individual exits and voices would not instigate a systemic change required to eradicate widely present educational corruption. In some cases, students are also inclined to stay put, as the transaction costs of transferring may be too high.

Similar to this study's earlier adaptation of Hirschman's (1970) voice to a corrupt educational setting, this corruption coping model contextualizes the notion of exit within the corrupt Bosnian educational system. For Hirschman, exit is replacing an existing institution with another competitor. Although assuming that a similar form of replacement will not always follow, this corruption coping exposition reflects on different types of exit from a particular institution. I propose a theoretical model that differentiates among various types of student exit specifically in response to educational corruption (Figure 5). First, students may physically remain in the same institution but *mentally* exit due to ongoing corruption they witness. They can make *nonphysical* or *mental exit* in one of two ways. Some students may lose motivation to work hard and instead seek ways to get by with minimal effort. Others may opt for nonphysical exit by pursuing their degrees while exiting mentally from their corrupt surroundings. Hirschman believed in customers' loyalty to a particular firm; instead, this education-specific corruption coping model presumes that students remain within the same corrupt university not out of loyalty but due to the students' awareness of corruption's systemic nature and consequent disempowerment it induces.

When looking at students' exit, this study finds that only 6.8% of the surveyed students "always" think about leaving their faculty, whereas only 3.8% think of it "almost always" (Figure 6). However, 27.9% "often" think of leaving, whereas 24.8% "rarely" think of leaving their faculty; at the same time, 8.9% of the surveyed students "almost never" think of leaving, whereas 25.8% "never" think of leaving their faculty (Figure 6). The finding that more than half of the surveyed sample think of exiting rarely, almost never, or never may be due to costly transfer, lack of

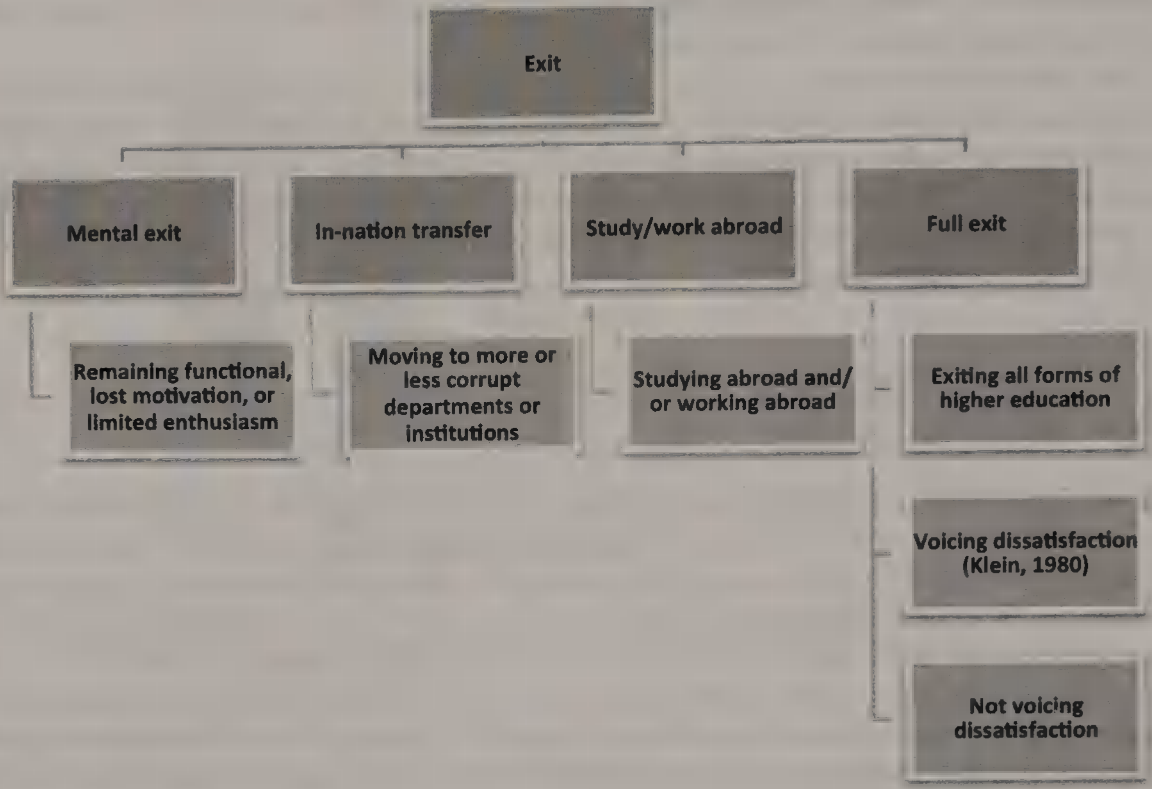
Exit
Mental exit
In-nation transfer
Study/work abroad
Full exit
Remaining functional, lost motivation, or limited enthusiasm
Moving to more or less corrupt departments or institutions
Studying abroad and/ or working abroad
Exiting all forms of higher education
Voicing dissatisfaction (Klein, 1980)
Not voicing dissatisfaction

FIGURE 5 Theoretical model for forms of exit. (color figure available online).

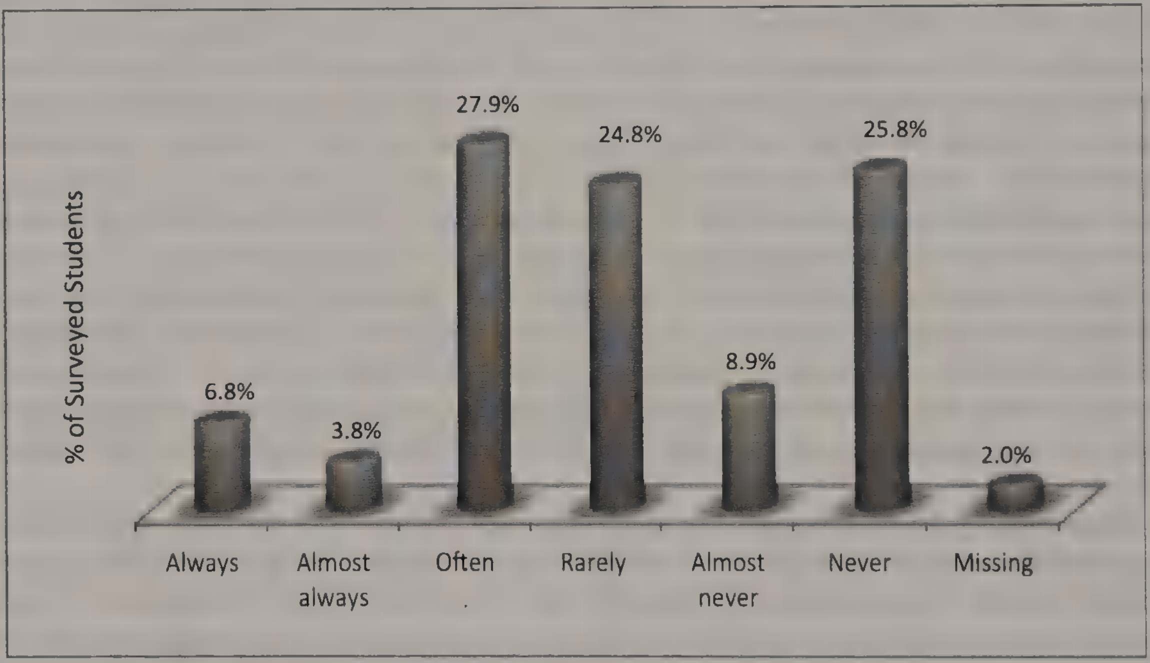

FIGURE 6 Frequency of thinking about leaving faculty. Source: Surveyed students. (color figure available online).

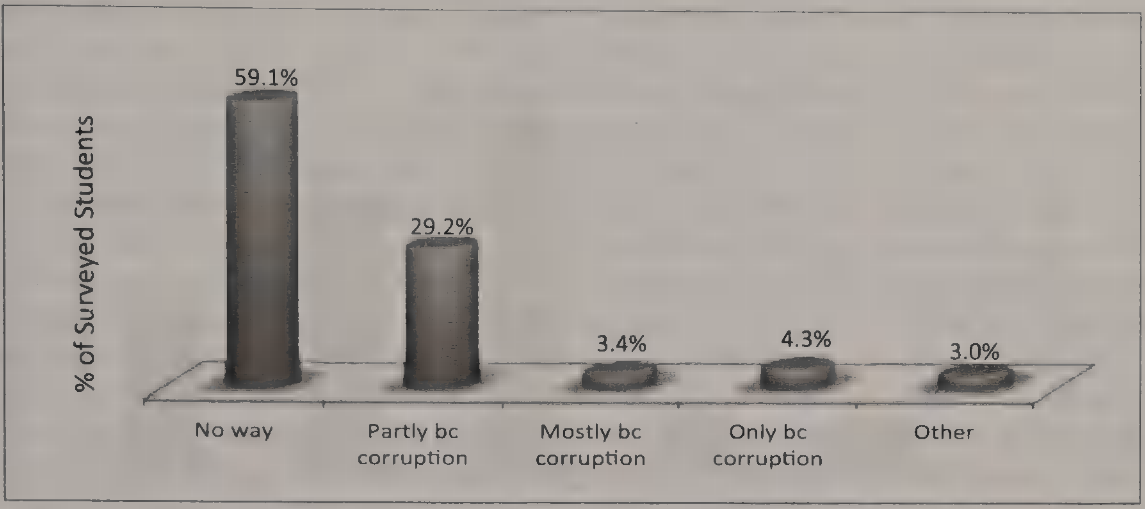

FIGURE 7 Exit due to corruption. Source: Surveyed students. (color figure available online).

transparent and affordable alternatives, and ultimately students' internalization of their perceived inability to change the status quo.

Mental exit suggests that most Bosnian students accept the conditions in which they operate. Despite the evident dissatisfaction with corruption, very few students are willing to leave the system as a result. They may feel as though other faculties are equally corrupt and the costs of transferring to another faculty clearly outweigh the benefits of the transfer. In other words, widespread corruption is a deterrent from transferring nationally. When asked if they would leave their faculty due to corruption, 59.1% of surveyed sample or 453 students said "no way," whereas 29.2% or 224 said they would leave "partly" due to corruption (see Figure 7). In line with the study's corruption coping framework, only 3.4% and 4.3% of the surveyed sample would consider leaving their faculties "mostly because of corruption" and "only because of corruption," respectively (Figure 7).

Looking through Hirschman's (1970) lens, students remain seemingly loyal to the higher education system in Bosnia. Even though 26.2% of the surveyed students believe that they fail an exam despite demonstrating sufficient knowledge, only few think of leaving their faculties. Although this trend—in Hirschman's jargon—signals loyalty, such behavior in actuality reaffirms the existence of *mental exit*. With the lack of alternatives, there exists a general tendency to mentally exit: a participant underlined that "all students are aware of it [corruption] but stubbornly choose not to pay attention to it" (Interviewee 1C). In December 2011, Helsinki Committee for Human Rights similarly confirmed that students in the Serb Republic are unwilling to react to cases of corruption, if and when they witness them (Srna, 2011).

Students' acceptance of the systemic corruption and their realization that the power of their exit is unlikely to produce a fundamental change allowed *mental exit* to emerge. Educational corruption has been accepted as a norm, and 38.5% of the surveyed sample believes that dealing with corruption is "neither difficult nor easy" (Figure 8). However, 29.4% and 16.3% of the surveyed students, respectively, believe that it is "difficult" or "very difficult" to cope with educational corruption (Figure 8). Even though corruption is widely accepted by many, others continue to have a difficult time dealing with corruption. Only 5.7% and 4.8% of the surveyed

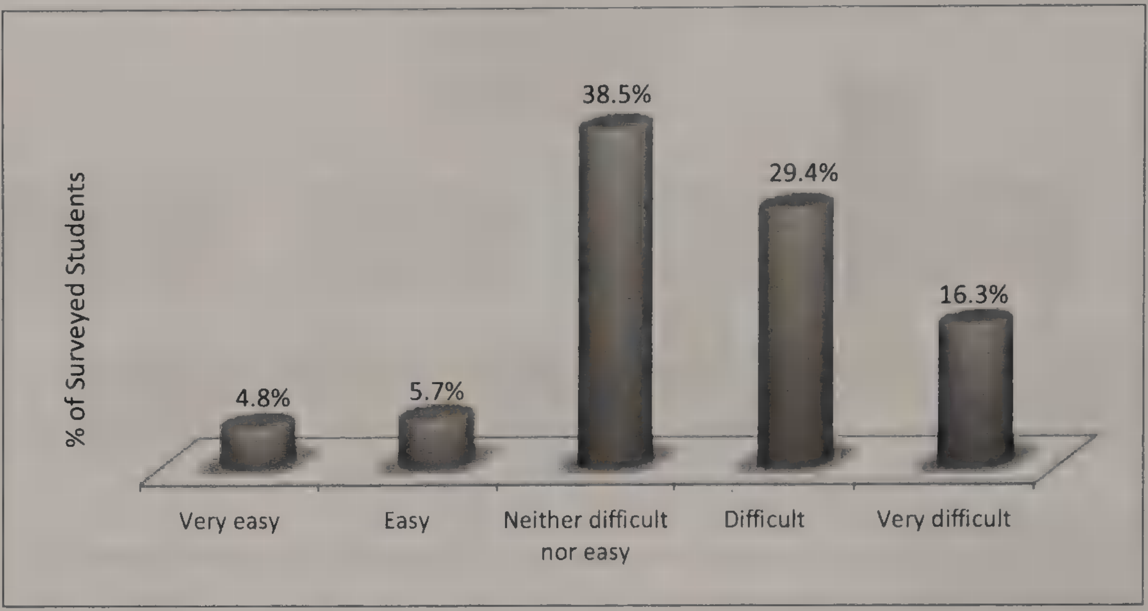

FIGURE 8 Exit due to corruption. Source: Surveyed students. (color figure available online).

sample was of the view that it is "easy" or "very easy" to cope with corruption, respectively (Figure 8).

Aside from *mental exit*, students may also transfer nationally to another faculty, program, or university. Here, the locality of transfer is not of interest, but the rationale behind the transfer is of interest. For instance, 18.5% of the surveyed respondents do not wish to transfer because they view other schools as corrupt (Figure 9). Of the surveyed sample, 16.6% of students see the

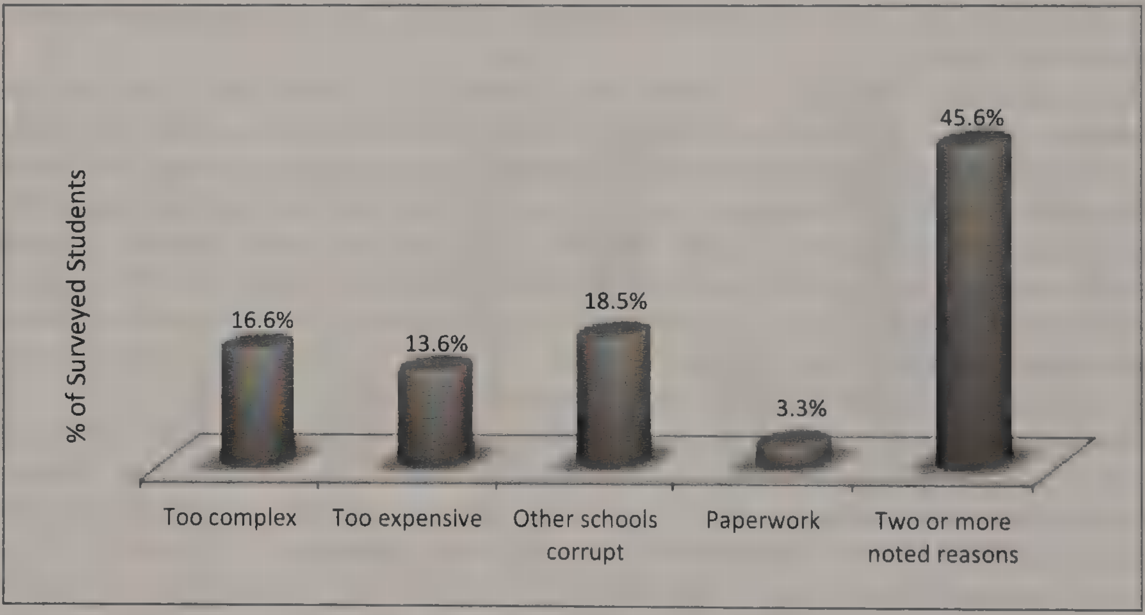

FIGURE 9 Reasons for status quo. Source: Surveyed students. (color figure available online).

complex administrative processes as obstacles to transferring, whereas 13.6% of students blame transfer costs (Figure 9). In addition, 3.3% are discouraged by the paperwork, and almost half of the surveyed respondents (45.6%) said that two or more of the factors just discussed play a role in their decision not to transfer (Figure 9). In some instances, students may even wish to transfer to more corrupt institutions to graduate faster. This transfer can occur to another department within the same faculty or can extend to transferring to entirely different institutions and, in many cases, into ghost private institutions. Those who are in discord with corruption may transfer to less corrupt institutions domestically—be it within the same university or to another university (Figure 5). Others may go abroad to work or study, and some may exit higher education, both domestically and internationally, due to the pressures of educational corruption (Figure 5).

Much of the research conducted on corruption often presumes that students are upset with the educational corruption, and this study does so to a certain extent. However, it is important to recognize the form of exit that is pursued by students who espouse educational corruption and purposefully look for the more corrupt colleges. In general, Bosnian students have a sense of which faculties and/or universities are more or less corrupt, and therefore know where they can obtain their degrees easily. Observing such a behavior enhanced the appeal of expanding and adapting Hirschman's (1970) framework to corrupt educational systems; in the world of business, a customer would be unlikely to replace one inefficient company with a more inefficient organization. Such behavior may, however, be a driving force behind some students' desire to exit and take further advantage of the ongoing corruption.

In corrupt settings, students often develop a certain level of resilience concerning their repetitive exposures to educational corruption. Although one would expect that those in disagreement with the ongoing corruption within their faculties would look for alternatives, Bosnian students often stay put. Although it may seem counterintuitive, one of the study participants classified staying at the corrupt faculty as a form of resistance to the ongoing corruption (Interviewee 1C). Departing from the faculty would be a preferred student reaction by those who wish to eliminate competition from the capable and hard-working students: therefore, despite the presence of corruption, "the only way to fight against the uneducated is to educate oneself" (Interviewee 1C).

CONCLUSION

The main purpose of this research was to understand the impact of corruption in Bosnia's higher education and develop a theoretical framework for the students' corruption coping mechanisms. Hirschman's (1970) work on the mechanisms of voice, exit, and loyalty informed creation of a new and education-specific reactionary model with a range of new outcomes both for the voice and exit mechanisms. The study hopes to have made a first step in providing a more complex interpretive framework for the reactionary mechanisms of the youth operating within corrupt educational systems. In the context of Bosnia, *voice* is disarmed from its potential for change, as it largely manifests itself through conversations with other students, friends, and family members. As to the *exit* mechanisms, the *physical exit*, be it to more or less corrupt institutions, does not occur frequently in Bosnia. Instead, it is the *mental exit* that dominates the educational setting. Most students, following realization that their individual reactions would not instigate a systemic change or that the transaction costs of transferring would be high, either lose motivation to work hard or simply ignore broader corruption and push through the system as if the ongoing corruption in no way obstructs their paths.

Bosnian students' coping abilities have been impaired by extensive and systemic corruption. Students' fear of authority not only deters students from realizing their full educational potential but also strips the country's youth of its power to move Bosnia forward. Powerful signals in the form of massive exit and loud voice are absent from Bosnia and Herzegovina's higher education, and this pioneering effort hopes that others will be intrigued by the study's findings and move toward exploring, more closely, the coping mechanisms of students facing corruption throughout developing countries.

AUTHOR BIO

Amra Sabic-El-Rayess's research interests include corruption, conflict, social exclusion, mobility, higher education, and elite formation, and how such phenomena usurp individual and societal aspirations of development. She is a faculty member at Teachers College, Columbia University.

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Fostering Good Governance at School Level in Honduras: The Role of Transparency Bulletin Boards

Frédéric Boehm
Universidad Autónoma del Caribe, Columbia

Temby Caprio
German International Cooperation (GIZ)

Corruption is at the core of weak governance. In the education sector, corruption is a threat to the quality of and access to education. Although the diagnosis is straightforward, effective reforms are more difficult to implement. The principles of good governance (transparency, participation, accountability, and integrity) provide us guidance, but innovative ways need to be found to fill these principles with life and create dynamics of change. We present a simple, efficient experience of introducing transparency and fostering participation and therefore accountability at the school level in Honduras. The transparency bulletin boards (*murales de transparencia*) are a homegrown response to the call for improving governance in a challenging environment.

Corruption is at the core of weak governance. In the education sector, corruption is a threat to the access to and quality of services. Although the diagnosis seems straightforward, reliable empirical evidence and publically available data are often difficult to find and effective reforms are difficult to implement. Honduras is among the more challenged democracies in Latin America and has one of the lowest corruption perception indices in the region.[1] Honduras is also severely limited in its ability to provide its citizens with quality public education services, among others. The challenges to improving the quality of education in Honduras are extremely complex. Decades of weak sector governance, politically thwarted reform initiatives, and high spending in a social, economic, and political context where corruption is endemic have resulted in little progress. Student achievement is among the lowest in the region.

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[1] The Corruption Perception Index score of Honduras in 2012, as published by Transparency International, was 28 (http://www.transparency.org/cpi2012/results). The Corruption Perception Index scores range from *very clean* (100) to *highly corrupt* (0). Honduras ranked 133 of 176 countries/territories in the 2012 index. Higher ranking countries are perceived to be cleaner and lower ranking countries more corrupt.

Correspondence should be sent to Frédéric Boehm. E-mail: frederic.boehm@yahoo.fr

The principles of good governance (transparency, participation, accountability, and integrity) provide us guidance to address some of the challenges at sector level, but innovative ways need to be found to fill these principles with life and create sustainable dynamics of change. Transparency bulletin boards (*murales de transparencia*) are a simple, efficient tool to introduce transparency and foster participation and, therefore, accountability at school level in Honduras. A simple bulletin board created by directors and teachers provides basic information for the school community. More important than the bulletin board itself and the information it provides are the dynamics of participation and accountability it creates. In many cases, this is the first time that parents actually see that the government is taking concrete steps to be *accountable* to them; this motivates questions and discussions among stakeholders in the education community at local and regional levels beyond the information provided. The bulletin boards are a homegrown response to the call for improving governance in a challenging, corrupt environment.

This article presents the transparency bulletin boards in the context of a growing body of evidence on the effects of corruption on the education sector and a slowly emerging dynamic of positive change in the education sector in Honduras. The experience is new, beginning with a pilot in late 2010. The story, we hope, will serve other actors in similarly complex situations.

THE PROBLEM OF CORRUPTION AND WEAK GOVERNANCE IN EDUCATION

During the last 10 years, our understanding of how different types of corruption may undermine good governance in the education sector, and how this in turn may affect the sector's outcome, has increased significantly. Huang (2008), for instance, found a significant negative effect of corruption on educational quality (composite index derived using each country's average science and mathematics scores) and on educational quantity (school life-expectancy indicator developed by UNESCO) while controlling for other variables.

How exactly does corruption affect educational quality and quantity? Corruption diverts scarce resources from intended purposes impeding *adequate* government spending on education. Mauro (1998) found a significant negative correlation between corruption and government expenditures on education—a finding that has recently been confirmed by Delavallade (2006), and De la Croix and Delavallade (2009). Also, corruption can impede *effective* government spending on education. Funds allocated to education may not reach their intended destination. An often-cited public expenditure tracking survey (PETS) carried out in 1995 in Uganda showed that only 20% of the allocated public funds actually reached schools. Part of the money was being captured by local elites (Reinikka & Svensson, 2004, 2005). Corruption also affects quality of education and access. For instance, Svensson (2005) found a negative relationship between corruption and the number of years spent in school, which could serve as a rough proxy to the level of primary and secondary education children get. Corruption need not involve money; stealing time also affects the quality of education. Ferraz, Finan, and Moreira (2012) empirically linked corruption in the education sector and at the municipal level more generally to lower educational outcomes, higher dropout, and failure rates among primary school students in Brazil. They also accounted for the difference between corruption and mismanagement of educational resources, which, as we show next, is a particularly relevant distinction in the case of transparency bulletin boards in Honduras.

If teachers do not show up in classrooms, or provide private classes for cash, this also affects both quality and equity of education (Patrinos & Kagia, 2007). There are legitimate reasons for teachers, as any professional, to be absent from work. Absenteeism and "ghost teachers," however, are examples of corrupt behavior and practice. The World Bank's 2004 World Development Report *Making Services Work for Poor People* generated groundbreaking new data from nationally representative surveys in six countries to better understand the extent and cause of teacher absence (World Bank, 2004; see also Chaudhury, Hammer, Kremer, Muralidharan, & Rogers, 2006). As we discuss next, data on teacher absence in Honduras are not available. Teacher absence is, however, a national phenomenon, and the transparency bulletin board is a first step toward generating reliable information beginning at the school level.

The links between corruption and gender inequality are particularly striking in the education sector. Case studies from different countries report gender-related violence and teachers abusing their authority to extort sexual favors. Gender-based corruption may also consist of students seeking to gain special treatment or better grades (see Bakari & Leach, 2009; Collins, 2009; Transparency International, 2007; U4, 2006). Heyneman (2004, 2009) pointed out another aspect. The education system plays a key role in guaranteeing fair access to the positions within a society based on merit and skills. If, in turn, positions are awarded according to kin, ethnicity, or political party, the system cannot guarantee that the selected person has the capacity to carry out a certain task in an effective and efficient way.

Ultimately, Patrinos and Kagia (2007) reminded us that if children are exposed to corruption in schools, this may "undermine an entire generation's core values regarding accountability, personal responsibility, and integrity" (p. 65). Further, an education system able to show and transmit the value of integrity may play a key role in reducing corruption in a country in the long term. Truex (2011), based on survey evidence from Nepal, found that education is a primary determinant of attitudes toward corruption. With increased levels of education come decreased tolerances for corruption, suggesting that improving access to education may be an important factor for reducing corruption.

In short, there are many good reasons to invest in reducing corruption risks in education through improving governance. For instance, the results of the aforementioned Ugandan PETS, after being published in local newspapers through a government-led information campaign, triggered deeper reforms at local level in response to the growing public pressure.[2] A new PETS carried out in 2002 showed that schools received more than 80% of the budget allocations in 2001 (Reinikka & Svensson, 2005).

Our objective is to contribute to this literature and to share the experience of promoting transparency and participation in the education sector from Honduras. The next section provides an anticorruption and good governance framework based on the principles of transparency, participation, accountability, and integrity against which we analyze the case. The third section proceeds with a case study containing a description of the challenges the education sector faces in Honduras to get a grasp of the difficult context within which the transparency bulletin boards emerged as a first response to a complex social and political dynamic. By linking the experience to the framework from the second section, we explain how and why it works, highlighting the underlying mechanisms and potential success factors. Finally, we extract some general lessons from this case, and ask the difficult question of sustainability.

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[2] Indeed, Hubbard (2007) explained that the reform dynamic was more complex than just the newspaper campaign.

A BASIC FRAMEWORK FOR ANTICORRUPTION MEASURES

Confronted with the task of minimizing corruption in education, the first step is to understand clearly the opportunities for corruption that may exist in the sector. Thanks to extensive research on the causes of corruption and a clearer understanding of different practices of corruption, we now have various generic approaches that identify corruption "hot spots" in the sector.

Heyneman (2004) considered what characteristics an *uncorrupted* system should have to then develop four different categories of educational corruption (see also Heyneman, 2009, pp. 2–4). First, the educational functions of the system can be corrupted, for example, the assessment of students, the graduation process, or the selection of students. Second, there are risks of corruption in the supply of goods and services, for example, the procurement of textbooks or of school meals, or the construction of schools. Third, agents of the education community may violate norms of professional behavior by, for instance, accepting gifts for grades, extorting sexual favors, not attending classes, or defrauding the education budget, for example, by pocketing salaries from different posts while working only in one.[3] Finally, the author points to possible abuses related to property and taxes.

Hallak and Poisson (2005), in turn, disaggregated the education sector in different areas (school building, equipment and text books procurement, teacher appointment and management, teacher behavior, examinations and diploma, and information systems) in order to then examine how these areas might be prone to different types of corruption such as fraud, bribery, favoritism, embezzlement, or capture. Patrinos and Kagia (2007, p. 68) drew on this risk map by Hallak and Poisson for a value chain approach, dividing the value chain in two: between policymakers and providers (upstream), and between providers and beneficiaries (downstream).

Such categories and risk maps are helpful to guide empirical work in specific contexts as they give hints on where to look. In the third section, we present an overview of studies of specific problems encountered in Honduras.

With a clear understanding of the problems and their contextual specificity, it is possible to design interventions. As corruption breeds in opacity, and is essentially related to established power structures, the rationale behind anticorruption measures relies on both increasing information (i.e., transparency) and creating checks and balances (i.e., voice and participation; see also World Bank, 2004). Ultimately increasing information is an attempt to diminish asymmetric distribution of information between different actors, which enables corrupt practices. Providing information can foster accountability, which implies being held responsible for the tasks that have been entrusted to a person or organization. Transparency and participation are preconditions for effective accountability, as they may enable in- and outsiders to detect corrupt practices and other inefficiencies. Participation leads to a competition of interests, reducing the potential for capture of political or administrative decisions by a specific, narrow interest. Transparency, in

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[3] A social audit conducted in Intibucá, Honduras, has shed light on many of these practices (see Consejo Nacional de Anticorrupción, 2009).

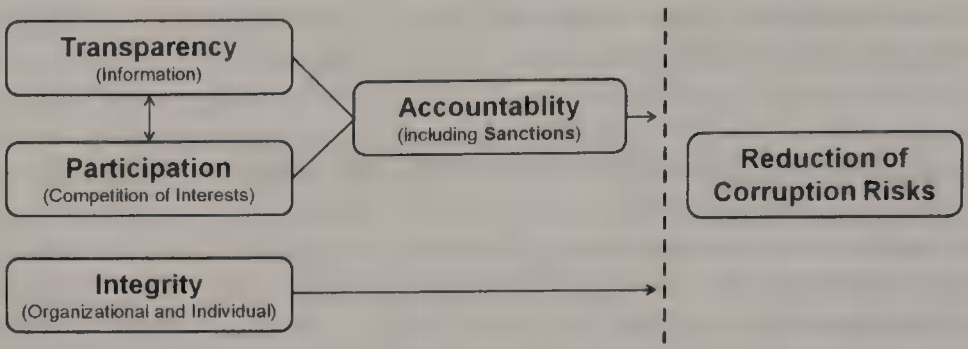
Transparency
(Information)
Participation
(Competition of Interests)
Accountablity
(including Sanctions)
Integrity
(Organizational and Individual)
Reduction of Corruption Risks

FIGURE 1 Basic framework for anticorruption measures.

turn, is a precondition for effective participation. For information to be used effectively, interested parties must be able to make the most out of it. This requires capacity, channels, processes, and ultimately interest and motivation to do so.

Although transparency and participation are important, they are not sufficient to introduce real accountability and reduce corruption risks. Borrowing from basic game theoretical insights, there must be some negative feedback mechanism punishing undesired actions that violates established rules to trigger changes in behavior. If an announced sanction is not applied, the punishment will fail to deploy its corrective function, but also, and perhaps more important from a dynamic perspective, will undermine its intended preventive effects. The resulting impunity subverts even further the government's credibility, and citizens may feel increasingly frustrated and cynical. That is, whenever efforts are invested in promoting transparency, it is important to think how detected corrupt behavior based on this improved information could be sanctioned. Sanctions do not only need to be formal ones, such as those provided by criminal or civil law, contractual sanctions, or administrative sanctions. Sanctions may also take the form of informal, social punishments, such as public naming and shaming in reports by civil society organizations or in the media, or an increased and openly expressed social discontent by the citizens.

Finally, a range of anticorruption measures can be introduced within organizations, for instance the ministry or schools. The OECD (2009) referred to such measures as an *integrity infrastructure*, as they aim at building organizational integrity. Such internal anticorruption measures can be rules based or values based, and can build integrity from top-down or bottom-up; typically we find a mixture of these approaches (see, e.g., Lange, 2008, or Lambsdorff, 2009). Standard measures include internal risk analysis, trainings, code of ethics, job rotation, internal whistle-blower procedures, random in-depth control, and so on. It is important to recognize the role of leadership (Rotberg, 2009) and intrinsic motivation (Schulze & Frank, 2003), as too much control may crowd out internal predisposition to be and to remain honest.

Figure 1 summarizes the main pillars of an anticorruption framework for designing interventions, operating through two main channels: (a) transparency/participation and (b) integrity. The related measures are intended to reduce risks of corruption; pretending to eradicate corruption would be a quite heroic claim.

However, caution is necessary here. The education sector is not insulated from broader governance issues and from the given institutional context. Budget transparency, for example, is a key aspect to foster a more responsible use of available resources but goes beyond the narrow education sector. Also, if the justice system is inefficient or corrupt, it will imply problems for the governance situation in the education sector. For instance, as previously mentioned, if discovered corruption cases remain unpunished, the effect of preventive measures to reduce corruption risks introduced in the education sector are likely to be mitigated. Government failure to take appropriate punitive measures could inspire even more social discontent and distrust in public institutions than existed previously. Furthermore, it is pivotal to understand the political economy of a given country, and to ask questions such as "Who are the actors," "What are their interests and possible hidden agendas," and "What do power structures look like?"

Benitez, Estache, and Søreide (2010) argued that it is crucial to take into account the political economy of a country. Although the authors are interested in infrastructure sectors, the findings are easily applicable to other sectors. They argued that policy recommendations that are merely based on a sound knowledge of a given sector may fail precisely because broader issues were not considered. Private agendas behind policy choices, for instance, are the key to understanding why and how certain political decisions are taken or not taken. Actually, this approach helps us to explain many of the reform failures we witness in the education sector around the world. This importance of the specific context should teach us to be very cautious regarding the replicability of "best" or even "good" practices.

This view coincides with Rodrik (2007), who argued in writing about the puzzle of development that basic principles of "good economics" actually are institution-free (e.g., property rights, incentives, sound finance, etc.). That is, it does not matter so much *how* these principles are attained, the important thing is that they are taken into account. The specific institutions contributing to achieve the aim of the principles, therefore, may well be (should be?) homegrown; this yields better results than trying to "transplant" good practices from one country to another.

In essence, this idea of promoting local solutions also applies to the four principles of anticorruption just mentioned. It is important to reduce information asymmetries through transparency, but *how* to achieve it is open to many innovative ways and ideas. Also, creating competition between different interests involved through channels of voice and participation is important to reduce the risk of capture by any one of the interests; the same idea applies to fostering accountability through different types of sanctions. Again, there is no panacea on *how* this might be translated into reality and results.

THE TRANSPARENCY BULLETIN BOARDS IN HONDURAS

The Context: The Education Sector in Honduras

Honduras is one of the poorest and most unequal countries in Latin America. The country first held free elections in 1982 and still faces important challenges with respect to democracy. At the heart of the problem is weak governance. According to various international think tanks and indicators, Honduras is characterized by highly concentrated economic and political powers, a weak judiciary, and weak control over budget processes. The Worldwide Governance Indicators 2010 from the World Bank capture the essence of the governance problems the country faces (see Figure 2).[4]

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[4] For more detailed information and other sources see, for instance, the reports from Freedomhouse (2007), USAID (2008), World Bank (2009), and the Bertelsmann Stiftung (2012). Boehm (2011) provided a general discussion and review of corruption and governance indicators for Honduras.

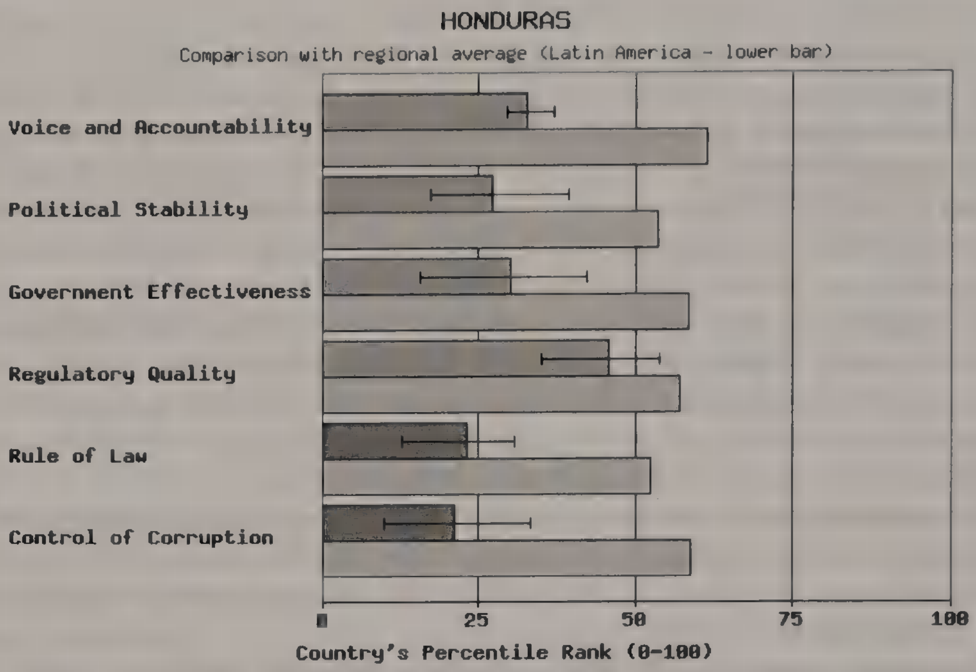

FIGURE 2 Worldwide Governance Indicators Honduras and regional average. © The Word Bank Group, Worldwide Governance Indicators (www.govindicators.org), Kaufmann, Kraay, & Mastuzzi (2010). Permission to reuse must be obtained by The World Bank Group, Worldwide Governance Indicators (color figure available online).

The upper bars represent the Latin American average for each of the six indicators: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. Even when taking into account the confidence interval (the black lines), Honduras scores lower than the regional average in every indicator. The perception of the political stability has suffered, of course, after the coup d'état crisis in 2009; but Honduras scores particularly low in the indicators trying to capture "rule of law" and the "control of corruption." The Corruption Perceptions Index confirms the World Bank Indicator on Control of Corruption. The most recent Corruption Perception Index 2012 ranks Honduras in the bottom quarter (rank 133 of 176 countries with a score of 28).

Some progress has been made in specific areas, however. For example, regulatory quality has improved, facilitating business and reducing both incentives and opportunities for lower level administrative corruption (see, e.g., the Enterprise Surveys carried out by the World Bank in 2006 and 2010).[5] The government recently announced a plan for fighting corruption in the administration over the period from 2011 to 2014, with particular emphasis on budget transparency and procurement. It is not, however, the first announcement of the government to fight corruption, and until now actual implementation has lagged behind rhetoric.

The situation in the education sector is equally characterized by decades-long administrative abuses and simultaneously an institutional discourse of getting serious about fighting corruption and improving quality. In 2003, Honduras completed its Education for All Plan (EFA) and was one of the first countries to join the EFA-Fast Track Initiative with concrete indicators and strategies to improve access to and the quality of primary education in the country. Despite modest progress in terms of access up until 2008, lack of governance, low-quality teaching and learning, and some of the highest teachers' salaries in the region characterize the system. Teachers unions are extremely powerful and often politically motivated; union membership is mandatory. Furthermore, ghost teachers are common (see, e.g., Fontana, 2008),[6] and there is no system of teacher performance evaluation. Recent teacher pay raises were linked to such a system and the raises were granted without evaluations (PREAL, FEREMA, 2011).

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[5] This data for 2006 and 2010 can be found at the World Bank Enterprise Surveys website (http://www.enterprisesurveys.org/Data).

The 2007–2008 audit of posts and salaries undertaken by the High Court of Auditors (*Tribunal Superior de Cuentas*) and financed in part by the World Bank and national funds revealed over 10,579 irregularities in the system at an estimated cost of Lps. 901, 456, 729 (or approximately US$47.7 million).[7] The infractions included pay for more hours than allowed by law, extra merit-based pay for undocumented academic qualifications, and additional pay for working in rural areas, when in fact the teacher did not report to work where assigned. Although the authorities are following up on the findings, there is little public information about the process and actions taken after nearly 4 years.

Classes are taught in three 4-hr shifts in Honduras: in the morning, afternoon, and evening. According to current legislation, teachers may hold up to three full-time teaching positions. There are no controls in place to objectively know whether teachers are actually in the classroom. Absences are high on any given day. Nation-level union leadership frequently calls strikes. A number of irregular practices are common, among them: teachers rent out one or more of their posts, collect the full salaries, and pay their substitute a lesser amount; teachers collect a salary and simply do not show up for work (they work other jobs simultaneously; some are working abroad, mostly in the United States); and some teachers even collect salaries for more than the three posts legally allowed.

As there is no control over actual days of school or hours taught, there is also little control over who is teaching where. District Education Offices (*Dirección Distrital de Educación* [DDi]) are the first line authority of pedagogic and administrative supervision. However, these offices are understaffed as well as ineffectively staffed (that is to say, politically staffed rather than based on merit), underbudgeted, undertrained, and subject to the often overwhelming and uncoordinated demands of data collection by the Ministry of Education as well as bi- and multilateral aid agencies.

Two official lists of teacher assignments—which are often contradictory—circulate in the system. The central human resources department in the capital, Tegucigalpa, keeps one list and the Department Education Office (*Direccíon Departamental de Educación* [DDE]) keeps the other. Neither of these two lists necessarily reflects reality. Although there is no doubt that there are, indeed, committed and excellent teachers in Honduras, in short, we do not know exactly how many teachers are on the books and how many teachers are actually in the classroom teaching.[8]

For these reasons, a Public Expenditure Tracking Survey published by the World Bank and the Inter-American Development Bank in 2010 emphasizes human resource management in the sector. The findings are compelling. Twenty-seven percent of the teachers from the sample could not be found in the database of the Ministry of Education. Almost one fourth (23%) of the teachers who, according to the official list, supposedly were working in a school actually didn't work there. According to the World Bank report, they should be counted officially as ghost teachers; the corresponding salaries are estimated to amount $US71 million (World Bank, 2010, Vol. I: 16). Overall, the annual loss due to teacher absenteeism is estimated to exceed $US19 million; around 13.5 days are lost per teacher per year, mostly caused by strikes organized by the teacher unions (World Bank, 2010, Vol. I, p. 17). In sum, the World Bank Institutional Governance Review from 2009 underscores "the strong bargaining power of the teachers' unions that oppose any attempt to reform in the sector" and "the insufficient accountability of all of the actors" as being at the core of the poor results of the education sector (World Bank, 2009, Vol. I, pp. 27–28).

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[6] Many press articles also refer to this situation (see, e.g., "Persisten Irregularidades," 2011).

[7] Audit reports are available at the *Tribunal Superior de Cuentas* website (http://www.tsc.gob.hn). September 26, 2011. http://www.transformemoshonduras.com/CP/tsc.php.

[8] Application of the Stallings method of classroom evaluation in 754 classrooms in 153 schools in Honduras in 2011 revealed that teachers were involved in academic activity on average 64% of class time. Otherwise, they were either socializing in the hallways or doing other nonteaching tasks during class time. Sixty-four percent is 21 percentage points below the OECD standard for good practice (Secretaria de Educación, 2011, p. 27)

The Transparency Bulletin Boards Pilot

In this context of increasing unbridled corruption and public frustration over the state of the public education system, the Ministry of Education Transparency Unit championed a pilot program designed to increase accountability at the school, regional, and national levels while promoting a culture of transparency and integrity at the community level. This initiative is a concrete response to legislation and policy documents that provide the legal and institutional framework to fight the endemic corruption that characterizes Honduras.

The Transparency and Access to Public Information Law enacted in 2006 recognizes that transparency and accountability are cornerstones to "the construction of an authentic democracy" and calls for the inclusion of relevant content in the classroom. More recently, the Education Plan 2010–2014 promotes the participation of civil society in the sector by implementing social audits and organizing information campaigns to establish a culture of accountability. During the design phase in 2010, the pilot project also benefited from the government-wide "Year of Transparency," one among several high-level and visible campaigns undertaken by the newly elected post coup d'état administration.

The pilot was designed around a simple instrument—a transparency bulletin board. The bulletin board is meant to correct for limited access to public information generated by the Ministry of Education and relevant to the quality of education and the proper functioning of the school. The idea was inspired by the now-famous example of posting budgets for school grants on the door of the school in Uganda (Hubbard, 2007), making important information about service provision available to clients.

In terms of our framework described in the second section, the provision of information (transparency) is a necessary but, as pointed out by Hubbard (2007), not sufficient step toward strengthening accountability and limiting the scope for corruption. The premise was that creating a culture of accountability, despite the challenging odds in Honduras, could begin with providing the community with simple, easy-to-understand information. It was also important from the beginning to consider that more is required than just providing information. There must also be someone who can and will use this information, who asks questions and cares about how the education system works, thereby creating social pressure toward positive changes. The pilot, therefore, focused strongly on the *process* of implementation, fostering participation by involving teachers, parents, the administration, and local civil society. In this highly politicized and polemical sector in Honduras, the instrument also indirectly provides a platform for directors and teachers with integrity to be recognized by their colleagues and communities as participating in a positive change dynamic.

The initial concept was to post information on one of the key governance issues in Honduras that local education stakeholders could immediately understand and monitor: the management of teachers. The two official lists of teachers, along with an explanation of how to officially report teacher absences and other irregularities at the school level, were published. The added value of the exercise for the Ministry of Education is to identify administrative irregularities and correct them in the central database managed by the human resources department and the database at the departmental level, providing the inputs for a much needed house cleaning.

The Department of La Paz was chosen based on its historically low educational indicators compared to the other 17 departments, previously established contact with civil society organizations, the commitment of the Department Director of Education to participate in the pilot process, and logistical considerations. The Department of La Paz is divided into 19 municipalities. There are 687 schools registered in La Paz. The Director of the District Education Office of the municipality of Cabañas was the first local education authority to volunteer to participate in the initial pilot.[9]

The Ministry of Education Transparency Unit was responsible for the design and implementation of the pilot initiative, with technical cooperation provided by the program PROEFA (Support to Basic Education in the context of EFA-FTI), a Ministry of Education and GIZ development measure, financed by the German Federal Ministry for Economic Cooperation and Development (BMZ). Alliances were formed with the Department Education Office (DDE), District Education Offices (DDi), municipalities, the La Paz Women's Network (*Red de Mujeres de La Paz*), the La Paz Network of Transparency Commissions (*Red de CCTs de La Paz*), and parents associations.

The Key Actors

As mentioned, a key factor for understanding the initial positive dynamic surrounding the transparency bulletin boards is the focus on fostering multistakeholder participation.

- *Ministry of Education Transparency Unit.* The Transparency and Access to Public Information Law (Decree Number 170–2006) was passed on December 30, 2006. Article 5 stipulates that every public institution must name a public information official and assign that official an adequate budget to carry out his or her functions. The Transparency Unit in the Ministry of Education was established in 2008. Attorney Delmys Marlene Chavez was the first director appointed under Minister of Education Marlon Brevé Reyes (Liberal Party) and still serves in this position in the current National Party administration. As previously mentioned, the unit was responsible for designing and implementing the initiative. They achieved this by collaborating with their administrative counterparts at the departmental level, the Departmental Education Offices (DDE), each of which includes a "transparency focal person," and with the District Education Office Directors.
- *School Directors and Teachers.* School Directors (who are also teachers by profession and often also teach classes) and individual teachers were involved with the pilot from the

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[9] In Honduras, education administrators (Department and District Education Directors) and School Directors are teachers by profession and, by law, members of at least one teacher's union.

beginning and are responsible for designing and providing updated information for the bulletin board.

- *Citizens' Transparency Commissions (CCT).* Article 59-B (revised in 2010) of the Municipal Law legally established CCT.[10] Each commission comprises at least five representatives of community organizations, unions, the business community, and other social organizations in the municipality. An assembly of representatives of community organizations, unions, private sector, and other social organizations elects the members, who serve for 3 years and can be reelected for one additional period. The main objective of the CCT is to implement social audits at the municipal level. A social audit is a process of holding public institutions accountable for the efficient and effective use of resources and delivery of services based on active citizen participation. In Honduras, social audits have become an increasingly popular means of insisting on transparency in public financial management at the decentralized level since 2002, with the Poverty Reduction Strategy Paper. The La Paz CCT Network, together with the La Paz Women's Network (see next), monitored the implementation of the initiative and executed a social audit of working teachers in four municipalities (192 schools) using the information provided on the bulletin boards.
- *La Paz Women's Network.* The La Paz Women's Network was founded in September 2007 in the municipality of La Paz and has approximately 200 members. The organization's objective is to promote community development as well as provide training for its members. Activities emphasize topics such as women's rights, social audits, and participatory budgeting at the municipal level. The network lobbies municipal governments to create and implement public policies in favour of women. As mentioned earlier, together with the La Paz CCT Network, the Women's Network participated in a social audit of the information provided on the bulletin boards, thus creating a demand for the initiative.
- *The Municipalities.* Honduras is administratively divided into 298 municipalities. Each mayor (*alcalde*) is elected for a period of 4 years. Elections are held during the same electoral process as voting for president and congress. Based on Article 91 (revised under decree 143–2009) of the Municipal Law, for the fiscal year 2011, municipalities were transferred 9% of the total national budget, of which 1% is earmarked for children's and youth projects and programs, whereas 2% is for projects and programs in the areas of economic development, social protection, and violence prevention against women. Thirteen percent of national funds are to be invested in operational and maintenance costs for social infrastructure (e.g., additional nurses and teachers salaries, school repairs or budgets for the CCT). During the pilot phase, municipal authorities participated by providing information and operating funds for CCT auditing activities.[11] In the case of the municipality of Yarula, the mayor contracted an additional teacher based on the results of the exercise.
- *Parents Associations.* Article 107 of the Education law of 1966 first institutionally promoted parents associations. Although the law called for associations to be formed in all public and private schools 35 years ago, even today few parents associations are legally constituted, which gives them the ability to receive and manage public funds. Most activities relate to improving school infrastructure. Few associations are directly involved in

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[10] Ley de Municipalidades de Honduras, Art. 59 reforma 2010.

[11] Although the Honduran National Association of Municipalities did not play an active role in the initial design, we think that they can and will be a key player in the future development of the initiative at the national level.

other management aspects or in activities more directly related to improving the quality of teaching and learning in the school. However, a new, positive trend is slowly developing with the introduction of the transparency bulletin boards and with recent progress designing and implementing school development projects (*Proyecto Educativo de Centro*) and school network projects (*Proyecto Educativo de Red*). To date there is little systematic, formal support for this structure.

Parents associations in the context of the World Bank supported *Proyecto Hondureño de Educación Comunitaria* (PROHECO) have a more comprehensive management function. PROHECO schools are community-managed schools introduced into the public system in Honduras in 1999 with the objective of improving access and governance at school level. Organizations called "community education associations" (*asociaciones educativas comunitarias*) administer these community schools. *Asociaciones educativas comunitarias* are nonprofit organizations, legally registered with the Ministry of Education, operated by parents and/or community leaders and charged with all aspects of school administration, including paying teachers. In 2001, also promoted by the World Bank, Congress created an additional structure aimed to promote community participation in schools, the ADEL, or the Local Educational Development Association (*asociaciones de desarrollo educativo local*; CERCA, 2004). As public schools, the PROHECHO schools were invited to implement the bulletin boards as well, with rather mixed results.[12]

Transparency Bulletin Boards: Implementation, Use, and Monitoring

In addition to posting the two lists of teachers, the transparency bulletin boards include a flow chart that explains how any citizen can file an official complaint or report corrupt practices (see Figure 3).

The Transparency Unit does not keep records on the number of complaints received via this particular channel. Therefore, it is not currently possible to determine whether the transparency bulletin boards have contributed to an increase in official complaints. Furthermore, communication between the Transparency Unit and the Human Resources Department (charged with following up administratively on complaints) is weak. In September 2011, then Minister of Education, Jose Alejandro Ventura, assigned a staff member from the Human Resources Department to follow up on findings and official complaints registered with the Transparency Unit. In March 2012, Dr. Marlon Escoto replaced Minister Ventura and subsequently, the Human Resources Department underwent staffing changes as well. In April 2012, a new liaison to the Transparency Unit was assigned. Communication and coordination between these two organizational units within the same ministry remains challenged.

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[12] A randomized monitoring exercise in Intibucá and Santa Bárbara showed that the majority of the schools in Santa Bárbara without a bulletin board (40%) are PROHECO schools. As a reason the report puts forward weak communication between PROHECO school directors and DDi and DDE (Iraheta, 2011). Another randomized monitoring exercise in Lempira, Copán, and Ocotepeque found that from the sample of 125 visited schools, only five didn't install the bulletin board, four of them being PROHECO schools (Lemus, 2011).

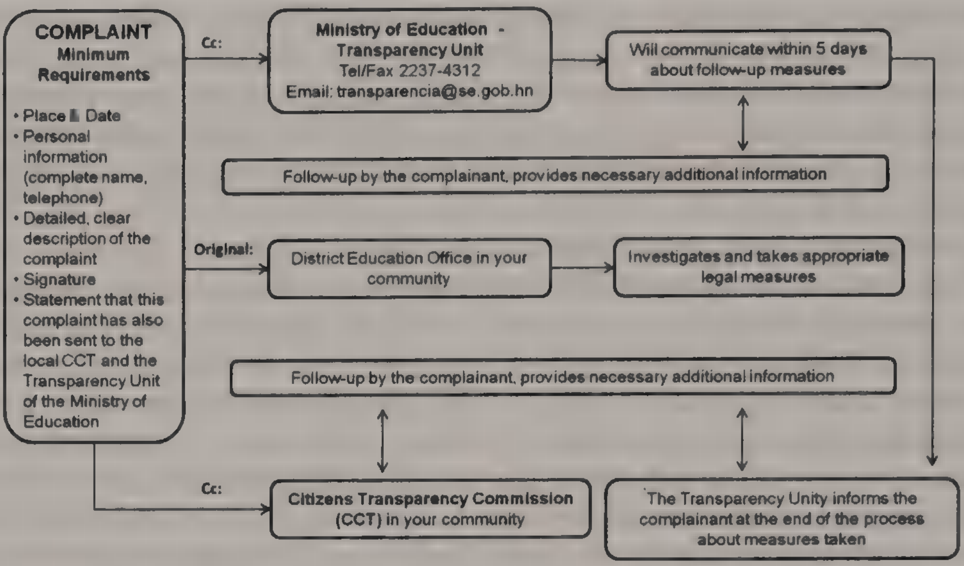
COMPLAINT
Minimum Requirements
• Place & Date
• Personal information (complete name, telephone)
• Detailed, clear description of the complaint
• Signature
• Statement that this complaint has also been sent to the local CCT and the Transparency Unit of the Ministry of Education
Cc:
Ministry of Education - Transparency Unit
Tel/Fax 2237-4312
Email: transparencia@se.gob.hn
Will communicate within 5 days about follow-up measures
Follow-up by the complainant, provides necessary additional information
Original:
District Education Office in your community
Investigates and takes appropriate legal measures
Follow-up by the complainant, provides necessary additional information
Cc:
Citizens Transparency Commission (CCT) in your community
The Transparency Unity informs the complainant at the end of the process about measures taken

FIGURE 3 How to report corrupt practices. © Ministry of Education Transparency Unit (translation by the authors). Reproduced by permission of Ministry of Education Transparency Unit. Permission to reuse must be obtained by the Ministry of Education Transparency Unit.

The initiative enjoyed the direct support of then Minister of Education, José Alejandro Ventura, from the inception of the pilot.[13] In February 2011, the Minister declared the installation of transparency bulletin boards mandatory at the preschool, basic, and secondary education levels in the whole country (officially 19,480 schools), beginning in La Paz (687 schools).[14] In July 2011, the Ministry of Education expanded the initial pilot to the five other departments in western Honduras: Intibucá, Lempira, Ocotopeque, Copán, and Santa Bárbara (4,255 schools). In addition to local, municipal, and department-level CCT, nine other regional civil society organizations were actively involved in the monitoring process: *Espacio Regional de Occidente*, *Asociación de Organismos No Gubernamentales*, *Organización para el Desarrollo de Corquín Copan*, Plan International in Copán and Santa Bárbara, *Comisionado Nacional de Derechos Humanos*, *Red de CCT de Occidente*, *Organismo Cristiano de Desarrollo Integral de Honduras*, and *Comisión de Acción Social Menonita* y *Hermandad de Honduras*.

The implementation of the initial pilot in La Paz and the subsequent expansion to the other five departments followed essentially the same process. The Transparency Unit first approached the DDE and then the DDi. Workshops were held with key actors with the purpose of sharing information and distributing the lists. In the process of expanding the activity to the western departments, an additional set of workshops was designed specifically for civil society organizations, in order to offer them the opportunity to become involved in monitoring at the school level and to encourage actual use of this information.

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[13] The Minister himself was a powerful union leader for 14 years before joining the newly elected administration in 2010. He was president of the second largest union PRICHMA (Primer Colegio Magisterial de Honduras) and instrumental in negotiating for the generous teachers benefits guaranteed in the controversial legislation of 1997 (*Estatuto Docente*).

[14] Secretaría de Educación, Reporte General 25 de enero 2010. http://www.se.gob.hn/190.5.81.199/SEE/archivos descargables.php. *Centros de Educacion Pre-basica* were excepted from this policy. *Centros de Educacion Pre-basica* are managed by community volunteers.

Although the Transparency Unit is officially responsible for monitoring implementation and use of the instrument, it was clear from the outset that its capacities to monitor the process alone are limited. Therefore, the unit has joined forces with civil society organizations to delegate parts of the monitoring activities. Volunteers fill out a simple format and submit their results in hard copy. The Transparency Unit collects the forms, inputs data manually, analyzes the findings, and passes them along to department and national-level authorities responsible for taking action. The unit then reports finding and irregularities to three users of the information: the department director (DDE, for corrective actions), the national Director of Human Resources–Teachers (to take corrective actions), and directly to the Minister of Education.

The results of a monitoring exercise based on a sample of 355 schools in the western provinces (7% of total schools) at the end of 2011 revealed that 31% of schools in the sample presented lists with errors or discrepancies, 167 teachers were on the payroll for a specific school and did not teach there, and 232 teachers were in fact teaching at a specific school but were not officially on the payroll for that school.

Scaling Up

According to monitoring exercises carried out in November 2011, 4,459 bulletin boards have been installed in the six western departments with GIZ/BMZ support.[15] The Transparency Unit formed an alliance with the National Anti-Corruption Commission (*Comision Nacional de Anticorrupción*) and the World Bank for the scaling-up phase in October 2011. The program was extended to the other 12 departments where, by end of January 2012, 6,194 bulletin boards had been installed with support from the World Bank.[16] The alliance with *Comision Nacional de Anticorrupción* is intended to help strengthen civil society's participation in these departments. The design calls for implementing the transparency bulletin boards in three municipalities per department (total of 36 municipalities and 4,813 schools) and posting the information on the website of the Ministry of Education.[17]

One key change to the design of the intervention is that the data collected regarding irregularities will be posted directly on the website of the Ministry of Education by representatives of civil society organizations (password protected access).

With activities in the western six departments supported by civil society organizations and new activities in 36 additional municipalities in the remaining 12 departments, there are still 8,827 schools in 12 departments that have not received direct support to implement the new policy. Efforts to reach these schools are currently planned for 2012 with support from the World Bank.

Scaling up does not only need to imply coverage. The boards can also be used as vehicles for other relevant information. In addition to posting the different lists of teachers assigned to each school, some school directors decided during the pilot phase to post information about school capitation grants (the *matricula gratis* program) and other programs (like the World Food Program school feeding program). This unexpected development not only reflects that some directors understand the utility of the bulletin boards as a school management instrument but also exemplifies how easy it is to expand and adapt the bulletin board to specific needs. As a consequence, the inclusion of this information on school grants was officially required in 2012.

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[15] Based on Iraheta (2011) and Lemus (2011).

[16] Information provided by the Transparency Unit, Ministry of Education (personal communication, January 26, 2012).

[17] *Ampliar y optimizar el proyecto Murales de Transparencia*, Unidad de Transparencia, SE 2011.

As previously mentioned, Dr. Marlon Escoto Valerio, who is simultaneously rector of the Universidad Nacional de Agricultura in the Department of Olancho, replaced Alejandro Ventura as Minister of Education in March 2012. Minister Escoto reissued the order to implement the instrument in all schools in June 2012[18] and in his first 6 months in office has taken a number of highly visible, high-impact anticorruption positions.

Promoting Change—Providing Better Services

Without an impact analysis, it is unfortunately not yet possible to quantify the concrete impact of the bulletin boards. However, they have inspired visible changes in attitudes and behavior on several different levels: within the Ministry of Education—within the Transparency Unit itself and between administrative levels of the Ministry, in the relationship between government and civil society actors, in civil society actors and their organizations, and among teachers.

The initiative has been a learning experience for the Transparency Unit. The experience has resulted in a good example of better division of labor between administrative levels of the system, a general weakness in the education system as a whole. The unit staff at central level no longer see themselves as just receivers of information. They are now more involved with communicating what is "transparency," and see themselves as actors in the system. Furthermore, although they are responsible for monitoring the implementation of the bulletin boards at school level, they quickly realized that physically accomplishing such a task was not feasible. Strengthening communication and clearly defining roles and responsibilities with the department and district education offices has been recognized as crucial to success. Formally, the department education offices should assign a focal person for transparency. This did not happen until the pilot was implemented.

In addition to literally practicing administrative decentralization in a system where there is much discourse and little evidence of such reform, the Transparency Unit has also shown that state and civil society actors can combine forces to improve official lines of accountability. In the process, they have defined a new leadership role for their unit and have reached a new understanding of their role at the central level and delegated supervision and monitoring to department-level staff.

The level of involvement of Honduran civil society in the education sector provoked by the transparency bulletin boards is new. International nongovernmental organizations have long supported Honduras in health and education, particularly after the catastrophic hurricane "Mitch" in 1998. In the aftermath of hurricane "Mitch," the number of Honduran nongovernmental organizations multiplied rapidly, focusing primarily on reconstruction and social control of Poverty Reduction Strategy funds. An organized civil society response to corruption in the education sector, however, is recent.

The role of parents is also in the process of being redefined in Honduras and the transparency bulletin boards have contributed in a small, concrete way to this new development. Parents have traditionally been called on to support public schools financially, to help with raffles, or to finance and organize festivities and cultural events. The social and economic power of teachers in rural communities, where parents are less educated and often illiterate, is unsurprising. Although parent organizations are not new, they are becoming more popular and active at the national level. The transparency bulletin boards provided many parents with their first opportunity to become actively involved in controlling the services that schools provide.

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[18] Oficio No. 0075-SE-2012, June 6, 2012.

Contrary to expectations, the transparency bulletin boards have been met with little resistance from teachers. On the contrary, many teachers were made aware of the degree to which human resource mismanagement affected them personally—that unbeknownst to them, for instance, they were not officially registered where they were teaching. The activity was seen as an opportunity to initiate the administrative process to clear up their individual status—and name, in this sense, ensuring their individual integrity in the face of administrative chaos. Ministry-level actors quickly addressed initial resistance from teachers in La Paz. Some teachers saw the transparency bulletin boards as yet another initiative to pit parents against teachers and even to privatize education (a common argument used by the teachers' unions to oppose reform), but the Transparency Unit staff from Tegucigalpa was able to play a mediating role and correct misinformation.

LESSONS LEARNED AND REMAINING CHALLENGES

Although it is certainly possible to conceive relevant and sophisticated solutions to the governance problems encountered in any country, they all must pass a reality check when it comes to actual implementation. A key message from this article is not to stop short at dreaming of what would be an optimal response to the challenges but to also think of what is feasible and meaningful for local actors. Regarding the chaos of the human resource management for teachers in Honduras, one might wish for an information technology–based information management system that automatically updates with each transfer of a teacher from one school to another and keeps track at central level of assignments in each school within the whole country. Both political consensus and resources for major and fast systemic change are scarce, however. Until the high-stakes political and financial decisions can be taken to overhaul the entire civil service human resources management system at the national level, pragmatic solutions are key to building a critical mass of public participation and strengthening the demand for accountability. The transparency bulletin boards are certainly not a magic bullet, but arguably a feasible practice adaptable to a challenging environment. Although not resolving the problem on its own, the bulletin boards should be viewed from a dynamic perspective.

Linking back to our basic model, the transparency bulletin boards clearly focus on the "transparency-participation" channel aiming at improving accountability. Although being highly cost-efficient, they are able to promote broader participation and discussion among different stakeholders on the issues of transparency and governance. By achieving this they can contribute to the process of strengthening the demand for accountability, which in turn opens space for a public debate on problems, irregularities, and administrative challenges. Raising awareness of the problems of corruption and weak governance for the sector performance indirectly also touches the "integrity" channel in our model, as this concept is, in the end, at the core of the intervention.[19] Clearly, parallel efforts to reduce corruption risks and improve governance structures have to be made on all levels of the education sector administration, and the initiative, like an eye-opener, has contributed to facilitating deeper governance reforms. Currently, the ministry is undergoing a process of developing its own internal anticorruption strategy, linking it to broader management reforms, responding both to an increased pressure by the government toward such reforms and the increased demand for accountability by citizens.

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[19] It is worth noting anecdotally that the issue of integrity was also relevant in discussions and work with civil society organizations. In a context where "yellow journalism" is the norm, it was not only important but also necessary to stress

A further important contribution relates to sustaining political will. Together with an increasingly critical population and an active and organized civil society that is tired of the pervasive problem of corruption in their society, measures such as the transparency bulletin boards may raise the costs for any government trying to reverse initiated reforms. This growing demand is of pivotal importance for making it politically attractive to foster governance reforms and anticorruption measures; a clear symptom of the general discontent in Honduras is the newly formed Anticorruption Party with founder Salvador Nasralla running for president.[20]

Moreover, the transparency bulletin boards should be seen in the context of various other initiatives to more actively involve local government and parents in quality control at the school level (e.g., participatory school planning, *Proyecto Educativo de Centro*). Also, in March 2011 the government of Honduras passed a new education law promoting community participation and quality education (*Ley de Fortalecimiento a la Educación Publica y a la Participación Comunitaria*). This law was viewed as a first step to revising the general education law dating back to 1966. The "participation law" calls for the creation of municipal educational development committees (*Comites Municipales de Desarrollo Educativo*), the main purpose of which is to exercise social control over the education system at the municipal level. The *Comites Municipales de Desarrollo Educativo* are expected to monitor school capitation grants, the school feeding program, the conditional cash transfer program "Bono de 10 mil," and teacher assistance. All of this information is already included in, or can easily be added to, the transparency bulletin boards and can thereby help in promoting the nationwide implementation of the new law.

Sustainability of the measure presents two man challenges. First, 2012 will be a critical year for the initiative, when the Ministry of Education is expected to make staff and financial resources available to ensure 100% compliance and follow-up. PROEFA investment was minimal (approximately $US9,000 not including staff time). The World Bank support was valued at approximately $US38,000 (August–December 2011). In a fiscal environment where 80% of the education budget for basic education is spent on teachers' salaries, few resources are available for even the most basic teaching and learning activities and other operational measures. Together with the challenge of participant motivation and momentum, the transparency bulletin boards and the Transparency Unit will need high-level political support as well as operational funds to ensure that the initiative is taken to scale to the extent that all schools, in 298 municipalities, use the method to generate change.

The more crucial challenge is related to the response, or lack of response, of the government to the identified irregularities. The momentum of the positive change dynamic can be thwarted if the government does not follow up on irregularities and complaints. The process of implementation of the transparency bulletin boards has raised expectations; parents and civil society organizations that denounced corrupt practices or participated in social audits of the bulletin boards want to see

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the importance of documenting objective evidence and promoting dialogue in the interest of finding constructive solutions to common problems, instead of allowing the initiative to be co-opted in the service personal agendas and vendettas.

[20] http://www.salvadornasralla.com/

the infractions sanctioned and the irregularities resolved. If the involved parties do not see any real progress in the near future, this may further augment the disillusionment with state actors in a country where the confidence in democracy is already weak.

We are confident, however, that despite these challenges, the current social environment and increasing public dissatisfaction with the quality of Honduran public schools, the recent legal reforms in the education sector and the anticorruption agenda of the current government combine to make for the right conditions for planting the seeds for long-term systemic change.

AUTHOR BIOS

Frédéric Boehm holds a doctorate in economics from the Technische Universität Berlin in Germany. Amongst other, he is currently course expert at the U4 Anti-corruption Resource Centre, and professor in political science at Universidad Autónoma del Caribe in Barranquilla, Colombia. His teaching, consultancy work, and research focuses on institutional economics and game theory applied to corruption, governance, and institutional reforms.

Temby Caprio, PhD, is Team Leader of the GIZ Basic Education Program for Afghanistan and German Education Sector Coordinator in Afghanistan, based in Kabul. From 2008 to 2012 she was Team Leader of the GIZ education program in Honduras, PROEFA. As a Peace Corps Volunteer in Cape Verde from 200–2002, Temby was a Teacher Trainer. Since then, she has worked for the GIZ as an education advisor on various projects for the last 10 years.

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An Attempt to Reinterpret Student Learning Outcomes: A Cross-National Comparative Study

Jeongwoo Lee
University of California, Los Angeles

Attracting significant attention from the media and policymakers, international student assessments are serving as pressures on and challenges for individual countries. Even so, paying attention only to publicly released rankings in international student assessments may lead to superficial interpretations of the assessment results. Simply equating the rankings with educational outcomes can be a questionable perspective because the assessment results can be interpreted differently. In this context, this article has explored student achievement in the Programme for International Student Assessment (PISA) tests in comparison with civic knowledge achievement in the IEA Civic Education Study across 17 countries. This article has also evaluated efficiency in educational processes by assessing outputs (student performance in PISA) against inputs (educational spending and learning time) directly used in the education system. These two approaches clarify that publicly released rankings in PISA change to some extent when the rankings are reevaluated by taking other factors into consideration. This implication should be allowed for in interpreting the results of international assessment and the relative rankings of participating countries.

INTRODUCTION

In today's knowledge-based society, educational outcomes, generally measured in student academic achievement, are primary concerns of the public at large, including policymakers involved in educational decision making. The public's attention to educational outcomes has moved from the national to the international stage, in particular because of the appearance of cross-national assessment of student achievement such as the Programme for International Student Assessment (PISA) and the International Association for the Evaluation of Educational Achievement (IEA) studies. This transition has generated a growing fascination with comparisons of student learning achievement, as it is believed that cross-national assessments present the aspects of quality in education in a cross-national comparative perspective, with a focus on student learning (Kellaghan, 2006). Cross-national student assessments thus serve to internationally benchmark state performance standards (Phillips & Jiang, 2011), especially due to the fact that they provide the relative rankings in student achievement of participating countries. For instance, Finland is regarded as the best reference country. Linnakyla (2006) pointed out that international attention exploring the

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Correspondence should be sent to Jeongwoo Lee, Graduate School of Education and Information Studies, Social Science and Comparative Education, UCLA, 405 Hilgard Avenue, Los Angeles, CA 90095-1521. E-mail: newjjallto@ucla.edu

"secret of Finnish success" has raised interest levels in the high performance of Finnish students in PISA. Furthermore, cross-national student assessments have been used as the primary metric for assessing the relative qualities (e.g., strengths and weaknesses) of national education systems (Bettinger & Slonim, 2005).

However, international assessment results constantly precipitate heated discussion and debates among researchers, a variety of interest groups, and policymakers (Linnakyla, 2006). In understanding these discussions and debates, we need to pay attention to two important issues. The first is whether the relative quality of education should be measured solely in terms of cognitive achievement (i.e., test scores) on such core subjects as mathematics, science, and reading. Cognitive achievement on the core subjects is generally harnessed as an indicator of education outcomes because of some distinctive characteristics such as relatively uncomplicated data collection, quantitative measurability and analysis, and its relationship with national economic performance. However, previous studies suggest that test scores are not the only means to measure student learning outcomes (e.g., Bowles, Gintis, & Osborne, 2001; Heckman, 2000). Specifically, Heckman (2000) argued that test scores used to assess cognition and academic ability produce the biased evaluation of human capital formation while excluding social adaptability as an academic outcome. It is axiomatic that education serves different ends, that is, schools are producing other outcomes besides cognitive achievement. Civic purpose of education, such as nurturing students to be responsible citizens and to participate in the public life of a democracy, is considered another essential component of education (Branson, 1998; Hinde, 2008; Homana, Barber, & Torney-Purta, 2006). In particular, civic knowledge as a critical student learning outcome grows in importance with growing diversification of societies, increased sensitivity to individual and group identities, and concern about effectiveness of preparing young people for future adult roles as creative and thinking citizens (Pigozzi, 2006).

Another central issue is whether the results of international assessments are actual and appropriate measures of student achievement. The media and policymakers seem to believe so. For example, the *Wall Street Journal* reported that U.S. teenage students are among the worst at math because the United States ranked 24th among 29 OECD countries in mathematics literacy in PISA 2003 (Kronholz, 2004). U.S. Education Secretary Arne Duncan likened mediocre scores of American students on the PISA 2009 exam to "an absolute wake-up call for America" ("In Ranking," 2010). However, one must ask, Did the *Wall Street Journal* and Arne Duncan reasonably and legitimately interpret the PISA results, and are the international assessment results clear-cut evidence of learning achievement? If the average student achievement scores of a country in reading, scientific, or mathematical literacy are considerably higher than those in another country, it might be automatically inferred that the education system of a high-performing country is more effective and advanced than a low-performing country. However, this article assumes that it is somewhat hasty to take the international assessment results at face value. Instead, the international assessment results need to be interpreted and reassessed after taking other relevant factors into account, which is a way to gain more insight into the quality of education. This issue is of particular importance due to the rising costs of education in conjunction with persistent concerns about quality that have called efficiency in education into question (Levin, Jamison, & Rander, 1976).

Given these two issues, the purpose of this article is twofold. First, this article explores both cognitive achievement and civic knowledge achievement as the central metric of educational outcomes by comparing them to each other and analyzing how they correlate. As an outcome of citizenship education, civic knowledge is regarded as a key cognitive component of citizenship that leads both to skills in understanding political communication and to attitude toward participation in conventional citizenship behavior (Torney-Purta, 2002; Torney-Purta & Lopez, 2006). This analysis is expected to suggest that cognitive achievement is just one of the educational outcomes. Second, this article intends to reinterpret the international assessments results by utilizing efficiency analysis (also called production-function approach) concerned with the production of outputs and with inputs, as education is a production process combining inputs to gain desired outputs (Mun, 2002). Efficiency is counted as one of the quality indices that are accessible to a variety of stakeholders in the educational process (Tattersall, Waterink, Hoppener, & Koper, 2006), as it can be understood as the extent to which educational systems are successful in optimizing the relationship between educational inputs and outputs (UNESCO, 1995). Consequently, this article provides some insights into reading and interpreting international student assessments adequately.

The remainder of this article is organized as follows: The first section clarifies data and indicators for efficiency analysis. The second section discusses the comparison of cognitive achievement and civic knowledge achievement, and the third section presents the results of efficiency analysis. The fourth section provides a brief discussion of the findings. Finally, this article ends with a conclusion.

DATA AND INDICATORS

This article uses the PISA[1] results for cognitive achievement[2] and the IEA Civic Education Study (CIVED)[3] results for civic knowledge achievement. To compare cognitive achievement with civic knowledge achievement, PISA 2000 and CIVED 1999[4] are selected. These two assessments intend to measure the achievement of comparable and representative samples of students in different subjects and in different school systems.[5] On the other hand, this article uses PISA 2009[6] results to measure educational efficiency only due to truly limited availability of data on inputs for civic education.

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[1] The PISA evaluates not the extent to which students master a specific school curriculum but the ability to use the wider knowledge, concepts, and skills in core subjects to meet real-life situation (OECD, 2001).

[2] Cognitive achievement is interchangeably used with student learning achievement on three core subjects (mathematics, reading, and science) in this article.

[3] CIVED basically assesses the content of students' civic knowledge and their civic attitudes and engagement. Specifically CIVED consists of five components: (a) civic knowledge; (b) skills in interpreting civic information; (c) concepts of democracy, citizenship, and government; (d) attitudes toward the nation, the government, immigrants, and women's political rights; and (e) willingness to participate in civic-related activities (Torney-Purta, Lehmann, Oswald, & Schulz, 2001).

[4] CIVED 1999 was conducted in two phases. This article focuses on the second phase only in which nationally representative samples were tested on their civic knowledge and skills.

[5] Sample students who participated in both assessments were not identical to each other. However, considering that CIVED was carried out 1 year before PISA was conducted, target populations appear to be the same. Target populations are based on the coverage of a specific age cohort: in PISA 15-year-olds and in CIVED 14-year-olds enrolled in educational institutions. Especially because this article compares national averages on international assessments, comparison of PISA 2000 and CIVED 1999 is reasonable.

[6] PISA 2009 results in lieu of PISA 2000 are used mainly because of data availability.

Educational efficiency requires agreement on measurement methods (Reimann, 2004) because it is an indicator of the quality of educational processes. This article analytically depends on the standard definition of efficiency—the ratio of output to input (Rumble, 1997)—which is specifically defined as internal efficiency (Mun, 2002). Internal efficiency in education indicates a comparison of educational outputs to the costs of educational inputs (European Research Associates, 2006). In this article, educational output is student test scores on PISA, and two educational inputs are examined: learning time and education spending. Student learning time is the most valuable resource in the educational process (Haahr, Nielsen, Hansen, & Jakobsen, 2005), and education funding is one of the most significant issues for debates on improving student achievement, though empirical evidence on the impacts of education funding are mixed (Fleisch, 2004; Lopus, 1990; Ram, 2004). Therefore, efficiency is estimated as the ratio of mean scores in PISA 2009 (the numerator) to the amount of time in hours and of money spent (the denominator) with the goal of exploring the relationships between differences in student achievement and differences in two inputs.

Furthermore, this article focuses on two different dimensions of efficiency: technical efficiency (TE) and allocative efficiency (AE). TE refers to maximizing feasible outputs from a given set of inputs, and AE refers to the ability to produce at a given level of output, minimizing the costs of input (Levin et al., 1976). Both, however, will identify the same set of efficient producers (Afonso, Schuknecht, & Tanzi, 2006). Educational efficiency is thus examined in terms of (a) test scores that students achieve for $1 spent and for 1 hr devoted to learning (TE) and (b) the amount of educational expenditure and learning time to increase one PISA scale score point (AE). Consequently, greater educational efficiency is generally indicative of the ability of students to achieve high scores with the least amount of time and/or money (Vlăsceanu, Grünberg, & Pârlea, 2007). This article also presents efficiency in a cross-national comparative sense. Namely, the relationship between outputs and inputs in country A are compared with that of another country.

Using these data, this article conducts a cross-national comparative study exploring and comparing the outcomes from the education systems of 17 countries[7] that participated in both PISA and CIVED. Examination of efficiency also concentrates on these 17 countries only in order to draw overarching conclusions. Results of cross-national comparison are reported in a descriptive way. In particular, graphical methods of data summarization are employed to present more understandable summaries of educational efficiency analyses and report differences and/or similarities between efficiency levels and country rankings.

COGNITIVE ACHIEVEMENT VERSUS CIVIC KNOWLEDGE ACHIEVEMENT

There does not appear to be a strong correlation between civic knowledge achievement and cognitive achievement on three core subjects, whereas more clear-cut linear relationships between one core subject and another are observed (see Figure 1). This visual inspection aligns with the values of correlation coefficients. The correlations of one core subject with another are 0.81 (reading and math), 0.82 (math and science), and 0.92 (reading and science), whereas the

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[7] The 17 participating countries are Australia, Belgium, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Italy, Latvia, Norway, Poland, Portugal, Russian Federation, Sweden, Switzerland, and the United States.

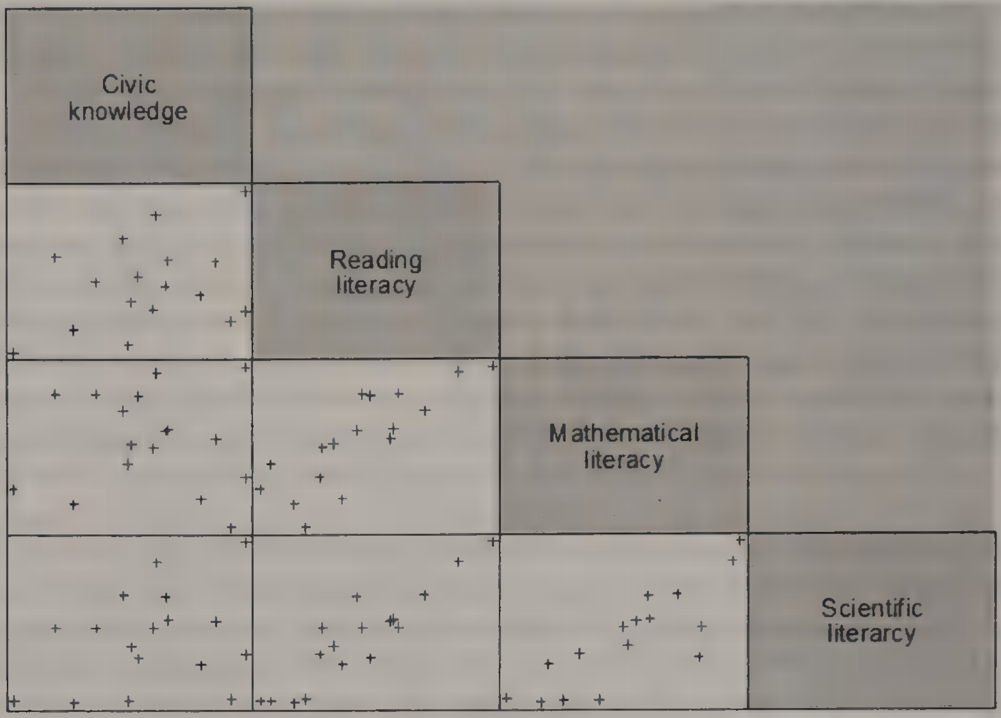

FIGURE 1 Relationship of one subject to another in PISA 2000 and ICVED 1999. Source: OECD (2001, 2010, 2011) and Schulz and Sibberns (2004) (color figure available online).

correlations of civic knowledge with core subjects are 0.30 (science), 0.32 (reading), and –0.05 (math). These findings imply that each country places different levels of emphasis on civic knowledge and knowledge of the core subjects.

This implication is reflected in civic knowledge rankings in Table 1 that shows differences/changes in rankings in the core subjects and civic knowledge. A simple comparison of these rankings may lead to a misleading interpretation. Yet there are two pronounced points. First, rankings of four countries (the United States, Italy, Poland, and Greece) in civic knowledge are higher than those in cognitive achievement. Second, the opposite case is observed in some countries, in particular Sweden, Switzerland, and Belgium, whose rankings in civic knowledge achievement turn out to be lower than those in cognitive achievement. In terms of the quartile distributions of rankings among all the participating countries, the former group belongs to the bottom quartile or lower middle quartile in PISA rankings but to the top quartile in CIVED rankings. Conversely, the latter group falls from the upper middle quartile in PISA ranking to the bottom or the lower quartile in CIVED ranking. In addition, Eastern European countries (Russia, Czech Republic, Poland, and Hungary), with the exemption of Latvia,[8] and countries with historically centralized authoritarian rule such as Germany and Italy, generally seem to regard civic knowledge achievement as important, considering their higher rankings in CIVED. Rankings of the other five countries (Finland, Australia, Norway, Denmark, and Portugal) are relatively static.

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[8] Among 17 sample countries, Latvia is at the bottom of rankings in both core subjects and civic knowledge.

TABLE 1
Student Achievement in PISA 2000 and CIVED 1999 and Rankings

Country	Reading Literacy	Mathematical Literacy	Scientific Literacy	Sum of PISA Test Scores	Civic Knowledge
Finland	546 (1)	536 (4)	538 (3)	1620 (3)	109.3 (2)
Australia	528 (4)	533 (5)	528 (7)	1589 (6)	101.7 (11)
Sweden	516 (9)	516 (15)	512 (10)	1544 (10)	99.1 (18)
Belgium	507 (10)	520 (9)	496 (17)	1523 (11)	94.7 (22)
Norway	505 (13)	499 (17)	500 (13)	1504 (15)	102.9 (9)
United States	504 (15)	493 (19)	499 (14)	1496 (17)	106.5 (6)
Denmark	497 (16)	514 (12)	481 (22)	1492 (18)	100.4 (14)
Switzerland	494 (17)	529 (14)	496 (17)	1519 (13)	98.3 (19)
Czech Republic	492 (19)	498 (18)	511 (11)	1501 (16)	102.6 (10)
Italy	487 (20)	457 (26)	478 (23)	1422 (24)	105.4 (7)
Germany	474 (21)	490 (20)	487 (20)	1451 (21)	99.8 (15)
Hungary	480 (23)	488 (21)	296 (15)	1464 (20)	101.6 (12)
Poland	479 (24)	470 (24)	483 (21)	1432 (23)	110.6 (1)
Greece	474 (25)	447 (28)	461 (25)	1382 (27)	107.9 (4)
Portugal	470 (26)	470 (24)	459 (28)	1399 (26)	96.2 (21)
Russian Federation	462 (27)	478 (22)	460 (26)	1400 (25)	99.6 (16)
Latvia	458 (28)	462 (25)	460 (27)	1380 (28)	91.5 (26)
OECD average	500	500	500	1500	100

Note. Source: OECD (2001) and Schulz and Sibberns (2004). Numbers in parentheses are rankings among all participating countries in the Programme for International Student Assessment (PISA) and the IEA Civic Education Study (CIVED), respectively. Average of civic knowledge is international average, not OECD.

Of interest, among 17 sample countries, Finland ranks first in all the four components of educational outcomes, which implies that it pursues both cognitive achievement and civic knowledge achievement in a desirably balanced way.

Figure 2[9] illustrates mean scores for all the 17 sample countries in both PISA 2000 and CIVED 1999. Figure 2 presents an especially interesting point—the degree of balance between cognitive achievement and civic knowledge achievement. A dashed diagonal line indicates a perfect balance between civic knowledge achievement and cognitive achievement. Finland appears to be the top performing country as regards to the balance between civic knowledge achievement and cognitive achievement. This finding may become another source of pride for the Finnish education system. Similarly to Finland, Denmark and Latvia are close to a perfect balance. However, considering that the extent of desirability of the balance increases as we go along the diagonal line from the bottom left-hand to the top right-hand, Finland is much more desirably well balanced than Denmark and Latvia. In particular, Finland is in the top quartile of student achievement in both PISA and CIVED, but Denmark is in the middle quartile and Latvia in the bottom quartile. In addition, this article categorizes countries below and to the right of the diagonal as cognitive

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[9] Student test scores are converted to a scale of 0 to 10 by the author. Initial range of sum of test is 1400 to 1600 for core subjects and 90 to 110 for civic knowledge. Reference points in converting initial test scores are OECD average, 1500, for core subjects and international average, 100, for civic knowledge, which means that 5 on a scale of 0–10 is international average. Scores below 1400 in core subjects and 90 in civic knowledge are converted to 0, scores above 1600 and 110 to 10.

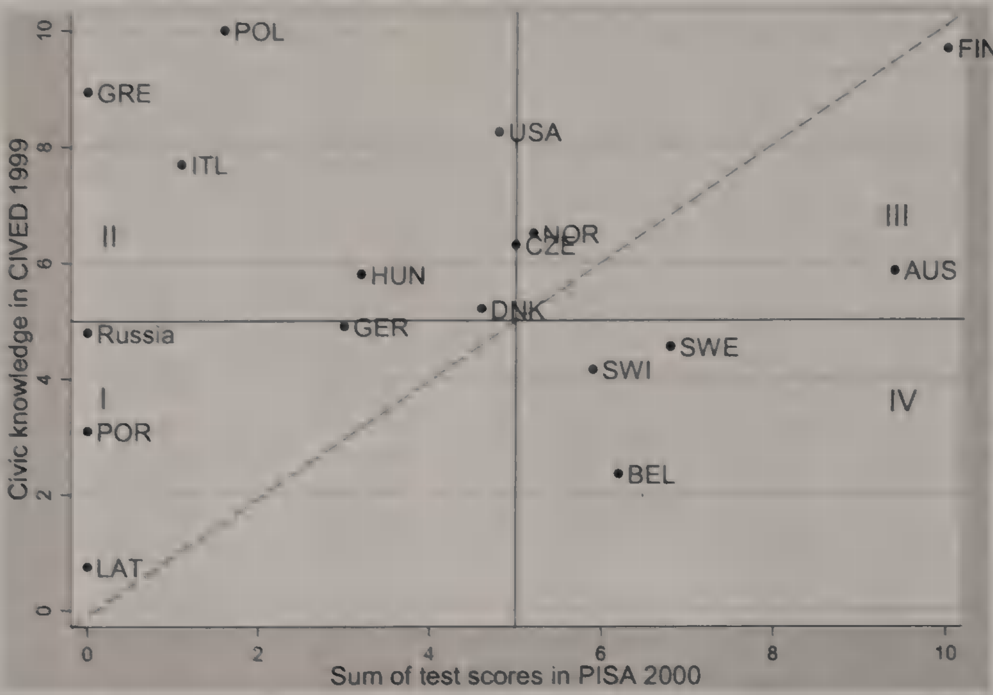

FIGURE 2 Dispersion of student achievement in PISA 2000 and CIVED 1999. Source: OECD (2001, 2010, 2011) and Schulz and Sibberns (2004). *Note.* AUS = Australia; BEL = Belgium; CZE = Czech Republic; DNK = Denmark; FIN = Finland; GER = Germany; GRE = Greece; HUN = Hungary; ITL = Italy; LAT = Latvia; NOR = Norway; POL = Poland; POR = Portugal; Russia = Russian Federation; SWE = Sweden; SWI = Switzerland; USA = United States (color figure available online).

achievement-skewed (CAS) and those above and to the left of the diagonal as civic knowledge-skewed (CKS), respectively. Australia, Belgium, Switzerland, and Sweden fall under the group of CAS and the rest of countries except for Finland and Denmark, under CKS.[10] Countries with lower rankings in civic knowledge achievement in Table 1 can be generally labeled as CAS countries and those with lower rankings in cognitive achievement as CKS countries.

Figure 2 additionally displays four cells (I, II, III, and IV) divided by two solid lines that are international averages. Cell I indicates below-international-average achievement in core subjects and civic knowledge, Cell II above-international-average achievement in civic knowledge only, Cell III above-international-average achievement in both, and Cell IV above-international-average achievement in core subjects only. Latvia, Portugal, Russian Federation, and Germany under Cell I can be categorized into low-achieving countries in both core subjects and civic knowledge. Finland, Australia, and Norway under Cell III may be regarded as relatively well-balanced and high-achieving countries in not only civic knowledge achievement but also cognitive achievement. Sweden, Switzerland, and Belgium are high-achieving countries in cognitive achievement only, whereas Poland, Greece, Italy, Hungary, Denmark, and the United States are high-achieving countries in civic knowledge only. However, it should be kept in mind that there are some within-category variations in student achievement in addition to between-category variations.

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[10] Although not shown in this article, the scatter plots of mean scores in each of core subjects and civic knowledge are truly similar as the scatter plot shown in Figure 2.

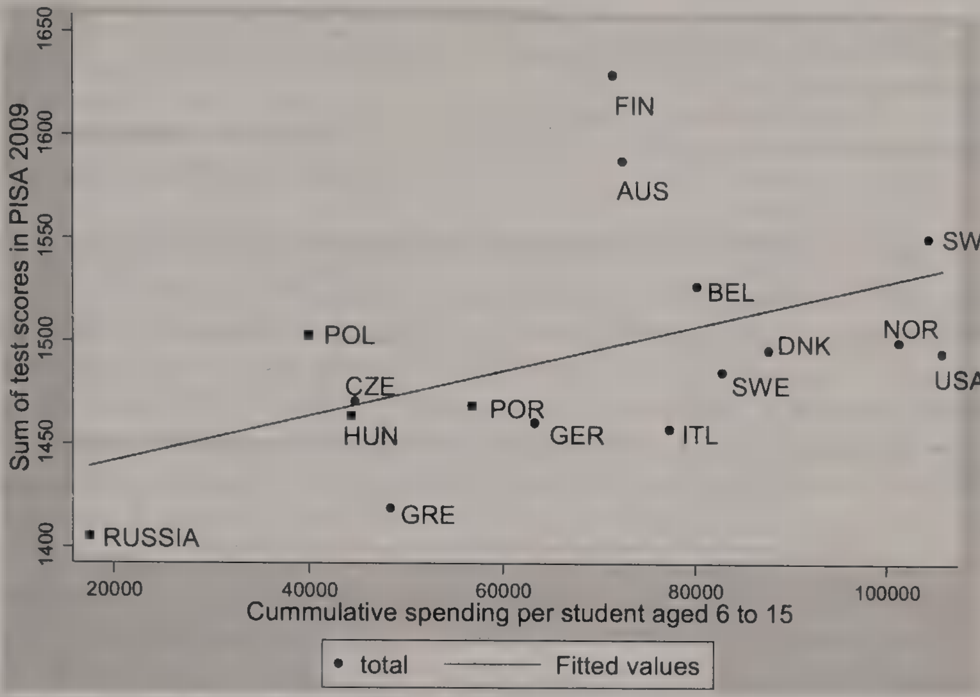

FIGURE 3 Relationship between student achievement in PISA 2009 and cumulative spending. Source: OECD (2010, 2011). *Note.* AUS = Australia; BEL = Belgium; CZE = Crech Republic; DNK = Denmark; FIN = Finland; GER = Germany; GRE = Greece; HUN = Hungary; ITL = Italy; LAT = Latvia; NOR = Norway; POL = Poland; POR = Portugal; Russia = Russian Federation; SWE = Sweden; SWI = Switzerland; USA = United States (color figure available online).

For instance, among countries under Cell III, Australia is more of a high achiever in PISA, Norway in CIVED, and Finland in both, respectively. Consequently, when educational outcomes are assessed and compared cross-nationally on a basis of both cognitive achievement and civic knowledge achievement, the relative rankings of countries change. Countries falling under Cell III, in particular Finland, may be considered benchmarking countries in student learning achievement.

EFFICIENCY ANALYSIS

Education Spending Per Student

Cumulative education expenditure by educational institutions per student is used as a proxy for the measure of education spending per student as in Haahr et al. (2005). This is reasonable now that the educational process is cumulative (Hanushek, 1987) and that student achievement is the outcome of a long-term and cumulative process of knowledge attainment (Baumert, Ludtke, Trautwein, & Brunner, 2009). First, a moderate linear relationship is identified between student achievement and cumulative spending[11] (see Figure 3) and there is a positive relationship between the wealth of a country and cumulative spending per student (see Table 2). These relationships do not indicate

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[11] The correlation between them is 0.48 with its p value of .05.

TABLE 2
Student Performance in PISA 2009 and Cumulative Education Spending per Student

Country	Sum of Test Scores	Score Ranking	Spending (US$)	TE	Ratio Ranking	AE
Finland	1,631	1	71,385	0.023	7	43.77
Australia	1,589	2	72,386	0.022	8	45.55
Switzerland	1,552	3	104,352	0.015	14	67.23
Belgium	1,528	4	80,145	0.019	10	52.45
Poland	1,503	5	39,964	0.037	2	26.59
Norway	1,501	5	101,265	0.015	14	67.47
Denmark	1,497	7	87,642	0.017	12	58.55
United States	1,496	8	105,752	0.014	16	70.69
Sweden	1,486	9	82,753	0.017	12	55.69
Czech Republic	1,471	10	44,761	0.033	3	30.42
Portugal	1,469	11	56,803	0.026	6	38.67
Hungary	1,464	12	44,342	0.033	3	30.29
Germany	1,461	13	63,296	0.023	7	43.32
Latvia	1,460	14	—	—	—	—
Italy	1,458	15	77,310	0.019	10	53.02
Greece	1,419	16	48,422	0.029	5	34.12
Russian Federation	1,405	17	17,499	0.080	1	12.45
OECD average	1,500		69,135	0.021		46.09

Note. Source: OECD (2010, 2011). Sum of test scores is just the sum of three core subjects, reading, mathematical and scientific literacy. Rankings are based on sample countries this article examines only. Cumulative education spending is in equivalent U.S. dollars converted using PPPs. Technical efficiency (TE) is ratio of scores to expenditure, that is, test scores achieved when $1 is spent, and allocative efficiency (AE) is an average expenditure to get 1 test score point. Both of them are calculated by the author. PISA = Programme for International Student Assessment.

that wealthy countries and more spending are more efficient in improving student achievement scores, however. The opposite seems to be a reasonable interpretation. According to Table 2,[12] the top three high-spending countries—the United States, Switzerland, and Norway—rather rank in the bottom quartile of ratio of scores to spending (see column 5), that is, their TEs are among the lowest. U.S. students achieve 0.014 PISA scale score point for every $1 in spending, and Norwegian students and Swiss students 0.015, respectively. These countries' efficiency level is lower than OECD average. On the contrary, Russian Federation, which achieves 0.081 point for every $1 in spending, ranks number one in TE, followed by Poland, Hungary, and Czech Republic. These interpretations are true in AE as well (see column 7). Russian Federation spends an average of $12.45, which is just 17% of the highest spending country, the United States ($70.69), to gain 1 score point, though its sum of test scores is the second lowest. Other efficient countries are Poland, Hungary, Czech Republic, and Greece, most of which, however, are not categorized as high-achieving countries in sum of test scores (see column 2 in Table 2). Top scoring Finland spends $43.77, which is about average, but accounts for 62% of the United States, and achieves 0.023 score point for every $1 in spending. Consequently, the relationship between cumulative spending and student achievement at least is far from deterministic, which indicates that there is between-country variation in educational efficiency as specified in Table 2.

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[12] Outcomes in PISA 2003 are similar to those specified in Table 2, which is not shown in this article. The author just checked whether any big changes are observed. Poland is the most cost-effective country in PISA 2003 for which Russian Federation is unavailable.

Time (in Hours) Devoted to Learning

In contrast to education spending per student, learning hours devoted to core subjects are negatively related to student achievement (see Figure 4). The correlation between them is –0.54 with its *p* value of .02. This negative relationship is somewhat extreme, considering findings from previous studies positing a weak statistical relationship between time spent on learning and students' average achievement scores on PISA due to other factors such as differences in students' ability to learn and the amount of homework given to students by their teachers (e.g., Fuchs & Woessmann, 2004; Haahr et al., 2005). Regardless of whether the relationship between them is negative or weak, it implies that the net effect of time devoted to learning is varied both within and across countries, that is, some students in some countries spend, either efficiently or inefficiently, their time on studying. Greece, Russian Federation, Italy, and Latvia appear to have low efficiency, whereas Finland, Switzerland, Sweden, and Australia have relatively high efficiency (see Figure 4). Table 3 specifically reports between-country variation in educational efficiency in learning time. Overall, efficiency rankings in learning hours differ to some extent from efficiency rankings in education spending. The most pronounced difference is that countries with a high

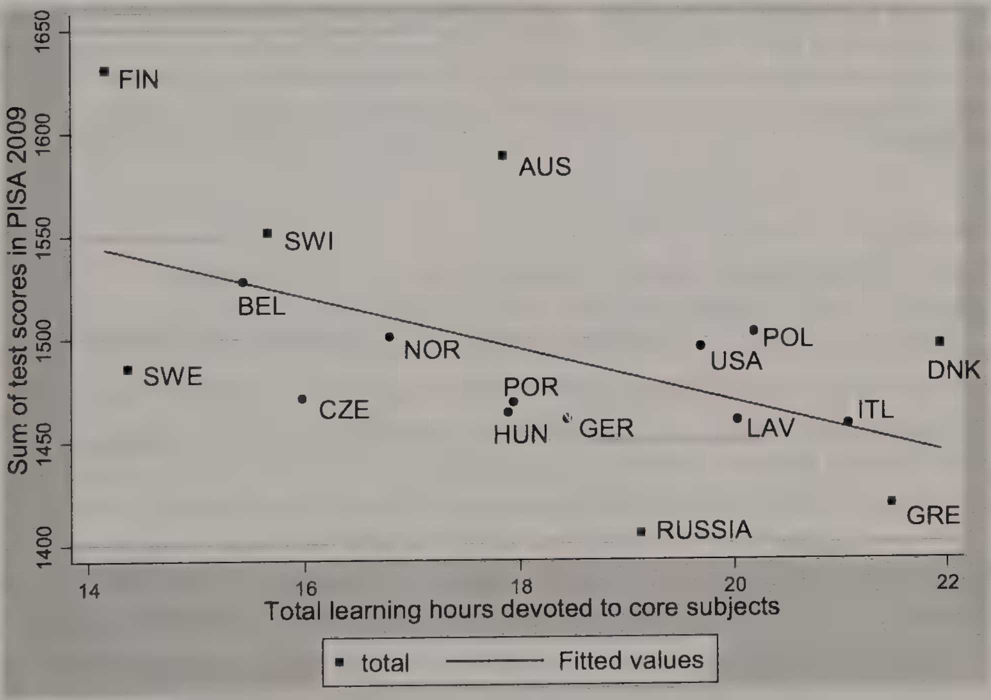

FIGURE 4 Relationship between student achievement in PISA 2009 and total learning hours. Source: OECD (2010, 2011). *Note.* AUS = Australia; BEL = Belgium; CZE = Crech Republic; DNK = Denmark; FIN = Finland; GER = Germany; GRE = Greece; HUN = Hungary; ITL = Italy; LAT = Latvia; NOR = Norway; POL = Poland; POR = Portugal; Russia = Russian Federation; SWE = Sweden; SWI = Switzerland; USA = United States (color figure available online).

TABLE 3
Student Performance in PISA 2009 and Time Devoted to Learning

Country	Sum of Test Scores	Score Ranking	Total Hours	TE	Ratio Ranking	AE
Finland	1,631	1	14.16	3.03	1	0.33
Australia	1,589	2	17.85	2.23	7	0.45
Switzerland	1,552	3	15.66	2.75	3	0.36
Belgium	1,528	4	15.43	2.69	4	0.37
Poland	1,503	5	20.19	2.02	11	0.49
Norway	1,501	5	16.79	2.35	5	0.43
Denmark	1,497	7	21.94	1.63	17	0.61
United States	1,496	8	19.69	1.96	13	0.51
Sweden	1,486	9	14.37	2.79	2	0.36
Czech Republic	1,471	10	15.98	2.30	6	0.44
Portugal	1,469	11	17.94	1.95	14	0.51
Hungary	1,464	12	17.89	2.21	8	0.45
Germany	1,461	13	18.44	1.98	12	0.50
Latvia	1,460	14	20.03	2.08	10	0.48
Italy	1,458	15	21.07	1.82	15	0.55
Greece	1,419	16	21.48	1.65	16	0.61
Russian Federation	1,405	17	19.13	2.16	9	0.46
OECD average	1,500		17.40	2.20		0.45

Note. Source: OECD (2010, 2011). Rankings are based on sample countries this paper examines only. Total learning hours include regular school lessons (direct instruction time), out-of-school time lessons, and individual study and are mean learning hours per week. In calculating ratio of scores to time, time is simple multiplication of total learning hours peer week and instructional weeks in years (school days) and time for 1 point indicates an average of learning hour for one test score point. Both of them are calculated by the author. Technical efficiency (TE) is ratio of scores to learning time and allocative efficiency (AE) learning time spent to earn one test score. PISA = Programme for International Student Assessment.

efficiency level in expenditures such as Greece, Poland, and Portugal show up as having a low efficiency level in learning hours, whereas the opposite trend is observed in such countries as Switzerland, Norway, and Sweden. Highly efficient countries in educational spending, Russian Federation and Hungary, retain approximately an average efficiency in learning time.[13] Australia and Czech Republic still have an average efficiency level. The highest achieving country, Finland, shows up as the most efficient. Finnish students achieve 3.03 PISA scale score points for every hour of study and spend 33 min to gain one test score point (see columns 5 and 7). Conversely, Demark is labeled as the least efficient country, followed by Greece, Italy, and Portugal (see column 6). Danish students gain 1.63 score points for every hour of study and spend 61 min to earn 1 test score point, which is 54% of the time Finnish students devote. Accordingly, it may be said that Finnish students are about twice as efficient as Danish students to gain 1 score point. Overall, efficiency levels of countries are generally not similar when measured using education expenditures and learning time as educational inputs.

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[13] The average TE level is 2.21 and the average AE level is 0.46.

The Combination of Two Inputs

The "least cost" set of input producing any given output at minimum cost (Hanushek, 1987) is another component of educational efficiency. Following the concept of the least-cost set of input, Figures 5a and Figures 5b depict the intersection of cumulative expenditure and time spent on learning. Figure 5a illustrates TE of each country, and Figure 5b illustrates AE. As in Figure 2, in Figures 5a and Figures 5b, there are four cells divided by OECD average. Cell I indicates below-OECD-average efficiency in education expenditure and learning time, Cell II above-OECD-average efficiency in education expenditure only, Cell III above-OECD-average efficiency in both, and Cel! IV above-OECD-average efficiency in learning time only. Finland, Hungary, Czech Republic, and Australia under Cell III can be classified as having high TE in both inputs, whereas Italy, the United States, and Demark under Category I as having low TE. Division of categories in Figure 5b is opposite to those in Figure 5a, that is, Cell I indicates above-OECD-average efficiency in both inputs, Cell III below-OECD-average efficiency in both, Cell II above-OECD-average efficient in learning hours only, and Cell IV in educational spending only. Finland and Czech Republic under Cell I have high AE in both inputs, but the United States, Italy, and Demark under Cell III have low AE. Australia is about OECD average in both inputs.

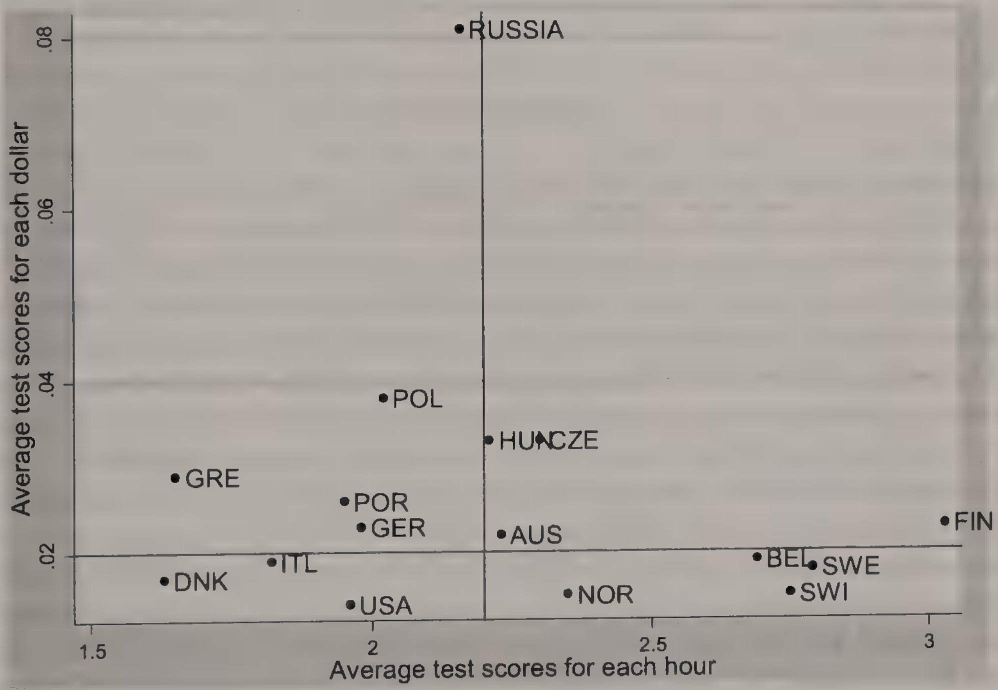

FIGURE 5a Dispersion of technical efficiency of each country. Source: OECD (2010, 2011). *Note.* AUS = Australia; BEL = Belgium; CZE = Crech Republic; DNK = Denmark; FIN = Finland; GER = Germany; GRE = Greece; HUN = Hungary; ITL = Italy; LAT = Latvia; NOR = Norway; POL = Poland; POR = Portugal; Russia = Russian Federation; SWE = Sweden; SWI = Switzerland; USA = United States (color figure available online).

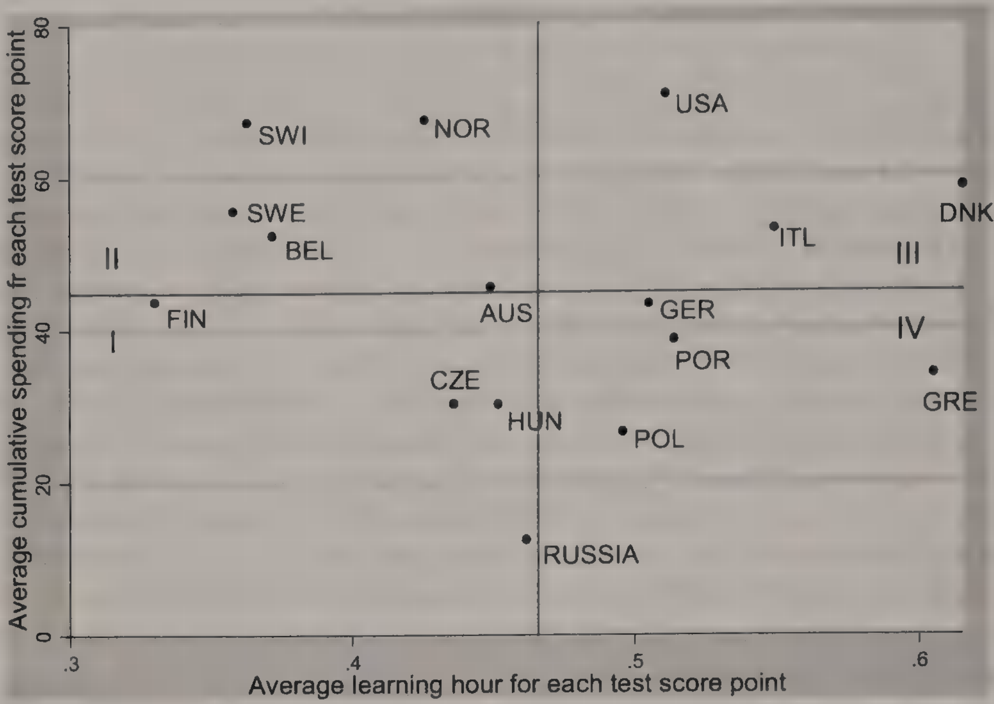

FIGURE 5b Dispersion of allocative efficiency of each country. Source: OECD (2010, 2011). *Note.* AUS = Australia; BEL = Belgium; CZE = Crech Republic; DNK = Denmark; FIN = Finland; GER = Germany; GRE = Greece; HUN = Hungary; ITL = Italy; LAT = Latvia; NOR = Norway; POL = Poland; POR = Portugal; Russia = Russian Federation; SWE = Sweden; SWI = Switzerland; USA = United States (color figure available online).

DISCUSSION

Comparison of civic knowledge achievement and cognitive achievement (Table 1 and Figure 2) intends not to provide evidence to prove any theory but to show the average level of student achievement in different subjects in each country. It is clear that the average student achievement level of and rankings of participating countries in PISA are not generally similar to those in CIVED with the exception of Finland and Latvia (see Table 1). For instance, Greece and Poland appear to be exceptional countries in that their achievement and rankings are in the top quartile in civic knowledge achievement, but they are in the bottom quartile in cognitive achievement. Yet, there are two exceptions: Finland is at the top in PISA and near the top in CIVED, whereas Latvia is at the bottom in both. Therefore, caution is necessary when discussing student achievement from a cross-country comparative perspective.

The description of this study poses questions for further study. High-performing countries in PISA such as Australia, Switzerland, and Belgium appear to be CAS. Is it then reasonable to accept that the perspective of previous studies, for example, negligence of civic education due to growing pressure to teach curricular areas included in compulsory assessments (Hinde, 2008), loss of civic education as a subject holding a rock-solid place in an international core curriculum (Schulz & Sibberns, 2004), are true in these CAS countries? Conversely, about two thirds of the sample countries are CKS. Then, is it legitimate to assume that these CKS countries consider civic knowledge achievement as a component of education equally important to core subjects?

There are other intriguing topics for further study. Finland shows up as the best country, considering its high efficiency and its students' high performance in both PISA and CIVED, followed by Australia and Czech Republic. Czech Republic is an interesting country, given its mediocre student achievement (even lower than OECD average) in PISA 2009, but its relatively high efficiency. On the contrary, the United States and Denmark show up as worse performing, because their rankings in efficiency are even lower than their rankings in PISA. Meanwhile, as previously stated, there are two conflicting features. Such countries as Sweden, Switzerland, and Norway have high efficiency in learning time but low efficiency in education spending. Greece, Portugal, Russian Federation, and Poland are the opposite. Then, can it be assumed that the former group provides students with high-quality and expensive education intensively, whereas the latter group provides poor-quality and inexpensive education for a long period? There is another two-comparable-group: Finland and Australia (high efficiency in time and money) and the United States and Denmark (low efficiency in both). In this context, it is legitimate to investigate what makes these countries different, that is, what leads to either high- or poor-student achievement. In particular, it would be interesting to explore what makes Finland ranked first in PISA and second in CIVED.

On the other hand, the findings that this article presents are not all-inclusive and deterministic for two reasons. First, exclusively concentrating on the quantitative amount of education expenditure and learning time may lead to an inaccurate measure of efficiency levels. According to the PISA (2010) report, cumulative expenditure can take the form of buildings and infrastructure, salaries paid to teachers, administrators and support staff, and transportation and meals for students. However, because the method of expenditure distribution is not clarified, the qualitative aspect of expenditure is difficult to recognize. How to use money is as important as absolute quantitative amounts of spending. For instance, all the 17 countries prioritize small class size and low teachers' salaries in allocating resources for education, but as previously discussed, efficiency levels are different. Conversely, such countries as Japan and Korea allocating resources with the priority of large class size and high teachers' salaries are categorized into high-achieving countries in PISA. In addition, not only the quantitative amount of learning time but also the qualitative aspect of learning time (i.e., whether time is effectively devoted to adequate contents of learning) is a potential factor affecting student achievement. It is obvious that learning productivity varies by student, because students' socioeconomic background may influence, for example, their homework practices, with the more advantaged students who are highly likely to have better opportunities to work efficiently (Haahr et al., 2005). In this regard, the educational efficiency just estimated is not firmly deterministic, leaving substantial scope for improving the efficiency of educational systems.

Second, more inclusive and detailed studies are required due to the fact that educational outputs can result from a variety of different combinations of inputs besides educational spending and learning time. Different combinations of inputs may be explained in two ways: extension of inputs examined in this article and inclusion of new types of inputs. When examining the efficiency of education expenditures, this article has focused on cumulative expenditure by institutions only, due to comparable data availability. But, given the need of microlevel analysis of educational decisions that individuals and/or households make, the efficiency of education expenditure needs to consider expenditures that the private sector spends in the education production process, in particular for countries where out-of-school learning is somewhat ordinary. Collecting, in particular cross-nationally comparable, household-level data are a big challenge. Other new exemplary inputs that previous studies generally examine are teacher characteristics, class size, family background, and curriculum (e.g., Jepsen, 2005; Nye, Konstantopoulos, & Hedges, 2004; Rivkin, Hanushek, & Kain, 2005; Woessmann, 2004). It is thus necessary to consider if other inputs are adequately integrated into the measurement of educational efficiency. Integrating other inputs into efficiency analysis will provide more insight into the interpretation of international student assessment results.

CONCLUSIONS

Attracting significant attention from the media and policymakers, international student assessments are serving as pressures on and challenges for individual countries. To illustrate, the number of press coverage pages in the PISA participating countries about 1 month after the public release of the results is 687 in Germany, 149 in Switzerland, 54 in Australia, and 36 in the U.S. (Linnakyla, 2006). Even so, paying full attention only to publicly released rankings in international student assessments may lead to superficial interpretations of the assessment results. Simply equating the rankings with the quality of the educational system (i.e., educational outcomes) can be a questionable perspective because the assessment results can be interpreted differently. In this context, one pertinent issue is whether we have documented conclusive evidence that the assessment results are true measures of student learning achievement of participating countries. In support of this position, this article has explored student achievement in the PISA tests in comparison with civic knowledge achievement in CIVED across 17 countries. This article has also evaluated efficiency in educational processes by assessing outputs (student performance in PISA) against inputs (educational spending and learning time) directly used in the education system. These two approaches clarify that publicly released rankings in PISA turn out to change to some extent when the rankings are reevaluated by taking other factors into consideration. This implication should be considered when interpreting the results of international assessment and the relative rankings of participating countries.

These two approaches are of importance to avoid a hasty conclusion about a country's education system. International student assessment results in some cases might provide "bragging rights," in particular for high-performing countries. Simultaneously, for some poor-performing countries, unsatisfactory results might trigger reform-minded policymakers to execute policy changes to catch up with high-performing countries and to improve learning achievement of their own students. However, as previously argued, the use of international assessment results should be treated and understood with great caution. Cross-national comparisons on a basis of international student assessments are beneficial to a great extent, in particular by encouraging improvements in educational investments, the establishment of new standards for learning achievement and curriculum development, and raising awareness of importance of school resources and teaching practices (Beaton, Postlethwaite, Ross, Spearritt, & Wolf, 1999; Postlethwaite, 2004). Even so, it is not recommended that national average scores per se become the sole foundation for education policy decisions on student achievement because of profound variation in educational systems between countries. It is crucial to have a sufficiently broad and long-term perspective rather than a narrow view of educational outcomes. Other relevant factors should be allowed for in interpreting cross-national comparisons. Learning time and educational expenditures are just exemplary factors.

AUTHOR BIO

Jeongwoo Lee is a doctoral student in Graduate School of Education and Information Studies, Social Science and Comparative Education, University of California – Los Angeles. His primary research interests lie in international and comparative education, sociology of education, the achievement gap, and access and equity in higher education. His diverse academic background – a B.A. in political sciences and Master's degrees in International Relations, International Economic and Development, and International Education Policy and Management – have enabled him to conduct research on important educational issues from a variety of perspectives.

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Global Mobility and Rising Inequality: A Cross-National Study of Immigration, Poverty, and Social Cohesion

Laura C. Engel
The George Washington University

Leslie Rutkowski and David Rutkowski
Indiana University

With globalization, the world has become more interconnected and interdependent, with people, capital, and ideas rapidly migrating across borders. Yet, along with greater global interdependence and increased diversity within societies, economic and social inequalities have deepened, making poverty one of the leading global problems. To lessen poverty around the world, better integrate immigrant groups into societies, and enhance stability, both societies and education systems are dedicated to fostering social cohesion as a key objective. Yet, still little is known about the extent to which immigration and socioeconomic status are predictive of social cohesion. Using cross-national data from the 2009 International Civic and Citizenship Study for 38 countries, this article further investigates the link between poverty, immigration, education, and social cohesion. Findings indicate that socioeconomic status is an important influence on social cohesion of immigrant students and that schools play an important role in fostering social cohesion.

The world has become more interconnected and interdependent, with people, capital, and ideas rapidly migrating across borders (McGrew & Held, 2002). Yet, along with greater global interdependence, economic and social inequality and marginalization have deepened (e.g. Sen, 2001). For example, economic inequalities have worsened in the wake of the recent global financial crisis, as global growth has stalled, making poverty one of the leading global problems (World Bank, 2011). Moreover, the movement of people has brought increased diversity within societies, raising concerns that societies are becoming more divided along cultural and ethnic lines (Banks, 2007). Together, both the "shifting centre of economic gravity" (OECD, 2011, p. 15) and the increase in diversity present education systems around the world with a range of challenging responsibilities: from preparing students with 21st-century skills needed for the global marketplace to instilling common values across diversifying national societies.

To better integrate immigrant groups into societies, and create more stable societies, *social cohesion*—the metaphorical glue that holds a society together—has been considered by some as one of the key components that societies and education systems must emphasize (Silova,

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The authors contributed equally to this article.

Correspondence should be sent to Laura C. Engel, Department of Educational Leadership, The George Washington University, 2134 G Street, NW, Washington, DC 20052. E-mail: Lce@gwu.edu

Johnson, & Heyneman, 2007). Increasingly, international organizations and national governments are highlighting the importance of social cohesion to global growth and development, peaceful and democratic societies, and greater equity, citing education as the key space for governments to foster the ideas that contribute to a socially cohesive society and alleviate poverty (Hulse & Stone, 2007; OECD, 2011). Yet, the diverse populations that are often the targets of social cohesion efforts greatly differ and include large variations in socioeconomic status (SES). To that end, drawing on cross-national data from 38 countries, this article investigates the link between immigration and social cohesion and the ways in which differences in SES moderate that relationship. By exploring cross-nationally whether immigration and SES are predictive of social cohesion, the article contributes to conversations about the role that schools have in fostering social cohesion and better integration of immigrant students in schools (Flores & Loss, 2010; Heyneman, 2010; Janmaat & Mons, 2011; Suárez-Orozco, 2001; Suárez-Orozco, Suárez-Orozco, & Sattin-Bajaj, 2010).

GLOBALIZATION, IMMIGRATION, AND INEQUALITY

There are two faces to the 21st-century global, mobile, and interconnected world: One that presents a sense of optimism about the potential for increased cross-cultural communication, democratic forms of governance, and peace-building, and the other that is marked by "increased violence, exclusion, and growing inequality" (Appadurai, 2006, pp. ix–x). To frame our study, we draw on Bauman's (1996) early work on globalization, in which he discussed global migration and made a distinction between two groups: tourists and vagabonds. Tourists, he argued, are individuals who freely move across borders and whose economic means, as well as their cultural capital (Bourdieu, 1986) make them more welcome migrants. Vagabonds, on the other hand, are those who are globally mobile not by choice, but often are forced into migrating for economic, political, social, or environmental reasons. As poor immigrants, vagabonds are not typically welcome, and are often the root of heightened social anxieties over shifting demographics (Appadurai, 2006). In this article, we contend that national societies are challenged by increased immigration, both of tourists and vagabonds. As nation-states increasingly look to social cohesion as an avenue to reduce marginalization and social fragmentation, accounting for differences and views among both the tourists and vagabonds may be crucial for the development of interventions and policies that will increase cohesion.

Immigration and Inequality

The devastating impact of poverty and inequality is far reaching, with consequences that resonate through national economies and societies. Recent research has shown that rising income inequality within countries is related to a number of important outcomes, including a decline in well-being, trust, public health, and overall social cohesion in societies (Wilkinson & Pickett, 2010). Likewise, other research illustrates the link between higher levels of income equality and trust among citizens in the social and political systems of society (Green, Preston, & Janmaat, 2006). These studies point to the alleviation of income inequality as an important aspect of increasing socially cohesive societies.

In addition, with globalization, national societies have arguably become more ethnically and culturally diverse, resulting in very few countries that are comprised of largely homogeneous populations (Inglis, 2008; Suárez-Orozco, 2001). It was estimated that in 2013 there were around 232 million international migrants worldwide (United Nations, 2013), with the trend in foreign-born residents increasing in many countries. In the United States, for example, one in eight U.S. residents is foreign-born (U.S. Bureau of Census, 2010). In addition, across the European Union (EU), there were 48.9 million foreign-born residents in 2011 (9.4% of the population), of which 32.4 million were born outside of the EU (Eurostat, 2012). This increased diversity within national borders presents a set of challenges and opportunities for the nation-state. For example, some of the negative discussion around increased diversity and immigration, both in public discourse and in the media, raise societal anxiety over the relationship between immigration, particularly of Bauman's "vagabonds," and the social and economic problems perceived to be associated with global processes (Appadurai, 2006). Europe is an illustrative example. As internal boundaries have become more porous, public debate and anxieties about external borders and immigration increase. Beck and Grande (2007) discussed this paradox, in which they argued that the more notions around a "traditional" or "insider's" Europe are dismantled, "the more persistently they are invoked and strengthened in relation to Europe's others" (p. 182).

Related to issues around immigration and changing demographics, most societies have continued to experience deepened economic and social inequalities (Sen, 2001), in spite of global mandates focused on poverty eradication over the past several decades (World Bank, 2011). And although efforts since the 1980s have been moderately successful, within-country inequalities have increased in several large countries, including the United States, China, and India (Dollar, 2005). Globally, the picture of poverty is staggering: Slightly less than half of the world is living on less than $2.50 a day, with at least 80% living on less than $10 a day (World Bank, 2008). Poverty is a significant problem in both wealthy and poor countries alike. For example, the United States, one of the wealthiest countries in the world, has one of the highest rates of poverty among Organisation for Economic Co-operation and Development (OECD) countries (OECD, 2012). Further, according to the National Center for Homeless Education (2012), there were more than 1 million homeless children in the U.S. school system in 2011 posing unique challenges for education.

Social Cohesion

Although our previous discussion above suggests a world that is considered both more global and increasingly mobile, it is still, in the words of Appadurai (2006), a world dominated by "vertebrate structures," the nation-state among the most pervasive of these structures. The confusion of living in a globally mobile world that remains closely tied to the nation-state brings a range of issues for those nation-states. For example, how does the nation-state encourage participation of its citizens in the global economy and foster good stewardship of a global environment while nurturing loyalty to the nation among its population? Add massive global flows of people to this equation and the nation-state must work harder than ever to build cohesion among its increasingly diversifying and in many cases, persistently unequal citizenry.

Helpful for framing the nation-states' need to build social cohesion and legitimacy of its functions, we rely on Claus Offe's (1984) theory of the state, in which he argued that there are two primary and mutually reinforcing concerns of state function: accumulation (the state's management of its economic infrastructure) and legitimation (the state's management of its citizens by gaining and maintaining citizen loyalty, which in turn helps to avoid economic crisis). From this perspective, there exists a social contract[1] between individuals and the state, in which state functionality requires buy-in from individual citizens. Education systems play an important role in both the state functions of accumulation and legitimation, providing what Green (1997) described as "disciplined workers" and "loyal recruits" (p. 134). Here we are most interested in legitimation processes, particularly the role of education systems in building cohesive national societies and helping to build state legitimacy (Green, 1997; Keating, Ortloff, & Philippou, 2009, p. 146). In this way and against the dynamics of globalization related to increased immigration and deepened inequalities, countries and international policy organizations alike (e.g. OECD, EU, World Bank) have focused on social cohesion as a way of fostering belonging while reducing marginalization and fragmentation.

Despite its frequent use in the policy literature at national and international levels, the concept of social cohesion is often only loosely defined. One reason for the lack of a precise definition is that the purposes of social cohesion are often dependent on the goals of the organization. For example, the World Bank (n.d.) posited that social cohesion is "fundamental for societies to progress toward development goals." To the World Bank (2009), social cohesion involves "strengthening communities" by getting citizens to work together to "resolve differences in a civil, non-confrontational way." The World Bank sees social cohesion as a way of lowering violence in countries where violence impedes development and focuses on improving social cohesion by enhancing people's attachment to communities. As another example, the EU has emphasized social cohesion as a central goal, although it has no exact or even agreed upon definition, leaving the concept clouded with ambiguity (Hulse & Stone, 2007). Social cohesion, nonetheless, is well integrated in the European social model. It is explicitly mentioned in all three pillars of the EU's Lisbon Strategy—social, economic, and environmental—which aimed to make Europe "the most competitive and dynamic knowledge-based economy in 2010 with more and better jobs and greater social cohesion" (Commission of the European Communities, 2000). It is also well integrated into the Europe 2020 Education and Training objectives, which emphasize the role that education plays in building a more competitive and socially cohesive Europe (Commission of the European Communities, 2010). For both the World Bank and the EU, social cohesion is often mentioned as a broad rationale for the pursuit of their respective institutional goals, yet often a concrete definition is not provided.

Following Chan, To, and Chan (2006) and Koonce (2011), we posit that more narrow definitions of social cohesion than those used by large organizations are useful in utilizing social cohesion for analyses of societies. In the academic literature, one of the more clearly stated definitions of social cohesion is by Green, Janmaat, and Han (2009) who characterize social cohesion as "the property by which whole societies, and the individuals within them, are bound together through the action of specific attitudes, behaviors, rules and institutions, which rely on consensus rather than pure coercion" (p. 19). In this definition, which is typical of the literature on social cohesion, the term refers to national cohesion, where societal unity is defined at the level of the nation-state (Koonce, 2011). Furthermore, as a process, rather than an end goal or condition, social cohesion requires "a sense of commitment, and a desire or capacity to live together in harmony" (Jenson, 1998, p. 1).

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[1] As discussed in Heyneman (2002-03), a social contract extends beyond a legal contract. It includes a "willingness to pay taxes and fulfil other public obligations; it may include the willingness to participate in public affairs, maintain cleanliness of one's property, act responsibly, or be a good citizen" (p. 75).

In determining characteristics of a socially cohesive society, scholars have pointed to different factors, including a measure of trust among citizens of one another and of society at large, as well as an agreement that citizens will cooperate and participate in society, its civic institutions, and the existing social norms (Chan et al., 2006; Han, Janmatt, Hoskins, & Green, 2012; Heyneman, 2005; Hulse & Stone, 2007; Koonce, 2011). One could reasonably argue then, that socially cohesive citizens will participate in civic activities (i.e. voting) and generally feel a certain degree of trust in their resident country, in turn contributing to state legitimacy (Offe, 1984).

Beauvais and Jenson (2002) identified several interactive elements that are associated with a highly socially cohesive society, including common values and a civic culture, social order and social control, social solidarity and reductions in wealth disparities, social networks and social capital, and territorial belonging and identity. These interactive elements were built on previous work by Jenson (1998) that sought to associate social cohesion with the following spectra: affiliation/isolation, insertion/exclusion, participation/passivity, acceptance/rejection, and legitimacy/illegitimacy. Further, studies of social cohesion often explore attitudes and perceptions of individuals and groups, such as one's immigrant background (Spoonley, Peace, Butcher, & O'Neill, 2005). For example, Han et al. (2012) studied how the perceptions and experiences of inequality by citizens impact factors pertinent to social cohesion, including civic participation, tolerance, and trust. Moreover, a number of studies have shown various factors that promote a socially cohesive society: involvement/participation within the community, inclusion or influence over social decisions, recognition of an individual's or group's dignity and legitimacy (Jenson, 1998; Spoonley et al., 2005).

In addition to these factors, Jenson and Saint-Martin (2003) discussed how investments in poverty reduction and increased resources for children are key elements in the promotion of a socially cohesive society. A small but growing body of literature has linked SES with social cohesion (Becares, Stafford, Laurence, & Nazaroo, 2011; Han et al., 2012; Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Ratcliffe & Newman, 2011). Studies have shown that greater income equality is linked with higher levels of social cohesion (Ratcliffe & Newman, 2011; Wilkinson & Pickett, 2010). Specifically, in their study, Wilkinson and Pickett's study (2010), they found a strong relationship between trust, often considered a characteristic of social cohesion, and income inequality. As one example, the countries where high percentages of citizens agreed with the statement that "most people can be trusted" were more income equal countries (Wilkinson & Pickett, 2010). Likewise, Green et al. (2006) linked educational equality with greater social cohesion.

Despite the growing body of academic and policy literature on social cohesion, the lack of clarity in narrowly defining the specific factors thought to contribute to social cohesion is most likely a result of a number of problematic terms such as what it means to be a "democratic" "citizen" in a "global" "modern" "society." Nonetheless, it seems to be a central goal of most to create a society where the well-being of all members is pursued without marginalizing any members. Although defining the factors of a socially cohesive society may be difficult (Koonce, 2011), we contend that there is a great deal to learn by exploring some of the factors that are believed to indicate a more socially cohesive society. Specifically, and guided by the aforementioned literature, we contend that (a) some useful proxies of social cohesion include trust in civic institutions, attitude toward resident country, and value of civic behavior and (b) these indicators are important factors to most educational systems worldwide. To that end, of the resources that nation-states can and do provide to children, universal education is certainly one of the most prominent. Heyneman (2010) argued that education can contribute to social cohesion in four ways: (a) by teaching students the rules that govern interpersonal and political action, (b) by providing students with an experience consistent with local citizenship principles, (c) by providing equal opportunities to all students, and (d) by incorporating the interests of diverse communities while providing students with a common understanding of citizenship (http://education.stateuniversity.com/pages/2428/Social-Cohesion-Education.html). Social cohesion appears to have increased in importance in education partly because of the instability and fragmenting nature of globalization trends related to increased cross-border migration as well as rising social and economic inequalities. Yet, despite the influx of immigrant students into many education systems worldwide, there remains a lack of knowledge about the experiences and attitudes of immigrant students compared to their native-born peers (Suárez-Orozco, 2001; Suárez-Orozco et al. 2010). There is also a need to consider the relationship between immigration and SES, to better understand the ways in which education systems can respond to immigrant populations. Therefore, we contend that there is much to be gained from exploring the relationship between immigration, inequality, and the factors that are thought to indicate a socially cohesive society (trust in civic institutions, attitude toward country, and value of civic behavior).

Against this background, we explore the international relationship between immigrant status of students and indicators of self-reported social cohesion, and whether that relationship is associated with the student's SES. Our main research questions can be stated as follows: Is there a relationship between immigrant status and social cohesion of eight-grade students around the world? And if so, does that relationship depend on SES?

METHODS

Data

The International Civic and Citizenship Study (ICCS) 2009 is a survey that examined the ways in which educational systems prepare their young people to undertake their roles as citizens (Brese, Jung, Mirazchiyski, Schulz, & Zuehlke, 2011). As a main emphasis, ICCS measured the conceptual knowledge of civic and citizenship education of more than 140,000 eighth graders in 38 educational systems around the world. In addition to achievement measures, ICCS was also designed to collect data pertaining to student dispositions and attitudes toward civic and citizenship education (Schulz, Fraillon, Ainley, Losito, & Kerr, 2008). The resultant database provides extensive, internationally comparable information on civic and citizenship learning outcomes. The target population included eighth-grade students who were approximately 14 years of age. See the appendix for a list of participating countries, sample sizes, and descriptive statistics.

Measures

Based on our research question and in line with our theoretical framework surrounding issues of social cohesion, we chose a number of measures from the student questionnaire. We discuss each of these in turn.

Student Measures

As a measure of immigrant status, we classified students into three possible categories: native, child of an immigrant, or first-generation immigrant. Native status means that both the student and his or her parents were born inside the country of the test. Students who were born in the country of the test and had at least one parent born outside the country of the test were considered children of immigrants. Students who, along with both parents, were born outside the country of the test were considered first-generation immigrants. The remaining variables used in the current analysis are derived scales, the psychometric properties of which were examined by the ICCS project analysts, who made the variables available as part of the international database. We provide a brief description of each scale; however, full details for each of these scales, including item parameters and model fit can be found in the ICCS Technical Report (Schulz, Ainley, & Fraillon, 2011).

To examine the effect of student-level socioeconomic differences, we included an index of socio-economic background (NISB). The NISB scale is a weighted composite of highest occupational status of parents, highest educational level of parents, and the number of books in the home. This scale has a mean of zero and a standard deviation of 1, with an estimated country-level reliability of .50 to .70 as measured by Cronbach's alpha (Schulz et al., 2011). Higher values on the NISB scale correspond to higher SES. Each of our outcome variables are weighted composites and include the degree to which students have trust in civic institutions (*INTRUST*), their attitude toward their country of residence (*ATTCNT*), and their value of civic behaviors (*CITCON*). All of the outcome variables are scaled within each country to a mean of 50 and a standard deviation of 10. The INTRUST scale comprises six items that ask students how much they trust the national government, the local government, the courts, police, political parties and the national parliament or congress. The ATTCNT scale comprises seven items that ask the degree to which the student agrees with statements about their resident country's political system, the flag, and their respect and admiration for the country they live in. Finally, the CITCON scale comprises six items that ask students how important a number of behaviors are for being a good adult citizen including voting, joining a political party, learning the country's history, following political issues, showing respect for government representatives, and engaging in political discussion. The pooled international scale reliabilities for each outcome variable are .84, .82, and .71, respectively.

Analytic Approach

Multilevel models (e.g., Raudenbush & Bryk, 2001) were fit to the ICCS 2009 data set to answer the research questions regarding the relationship between immigrant status, SES, and social cohesion. In particular, a model that treated students as nested within schools and schools as nested within countries was fit to each of the three outcome variables. Sampling weights were applied to all analyses to account for the fact that samples were not drawn at random from the population (Rutkowski, Gonzalez, Joncas, & Von Davier, 2010; Schulz et al., 2011) and weights were normalized so that the sum of the weights was equal to the sample size.

As an initial step to provide justification for a multilevel modeling approach, a null or empty model was fit to each of the outcome variables. This model contains no predictor variables and serves to decompose the total variance in the outcomes into a within-school part (σ^2), a between-school, within-country part (τ_0^2) and a between-country part (φ_0^2). The proportion of variance attributable to each level is just the ratio of that variance parameter over the total variance, where the total variance in the outcome is given by $\sigma^2 + \tau_0^2 + \varphi_0^2$. A general rule of thumb indicates that if 5% or more of the variance in the outcome is attributable to the between parts of the model (school and country), a multilevel modeling approach is prudent (Hox, 1998).

To answer the research question, the following model was fit to the data using the SAS MIXED procedure (SAS, 2003) for each of the outcome variables.

Level 1:

$$OUTCOMEi_{jk} = \beta_{0jk} + \beta_{1jk}(FIRST_{ijk}) + \beta_{0jk}(CHIMM_{ijk}) + \beta_{3jk}(SES_{ijk})$$
$$+ \beta_{4jk}(FIRST_{ijk} * SES_{ijk}) + \beta_{5jk}(CHIMM_{ijk} * SES_{ijk}) + R_{ijk}$$

Level 2:

$$\beta_{0jk} = \delta_{00k} + \delta_{01k}\left(MFIRST_{jk}\right) + \delta_{02k}\left(MCHIMM_{jk}\right) + \delta_{03k}\left(MNISB_{jk}\right) + U_{0jk}$$
$$\beta_{1jk} = \delta_{10k}$$
$$\beta_{2jk} = \delta_{20k}$$
$$\beta_{3jk} = \delta_{30k}$$
$$\beta_{4jk} = \delta_{40k}$$
$$\beta_{5jk} = \delta_{50k}$$

Level 3:

$$\delta_{00k} = \gamma_{000} + V_{00k}$$
$$\delta_{01k} = \gamma_{010} + V_{01k}$$
$$\delta_{02k} = \gamma_{020} + V_{02k}$$
$$\delta_{03k} = \gamma_{030} + V_{03k}$$
$$\delta_{10k} = \gamma_{100} + V_{10k}$$
$$\delta_{20k} = \gamma_{200} + V_{20k}$$
$$\delta_{30k} = \gamma_{300} + V_{30k}$$
$$\delta_{40k} = \gamma_{400} + V_{40k}$$
$$\delta_{50k} = \gamma_{500} + V_{50k}$$

According to this model specification, there are level-one effects for first-generation immigrant and child of an immigrant status (γ_{100} and γ_{200}, respectively), SES (γ_{300}), and interactions between immigrant status and SES (γ_{400} and γ_{500}). Each of these level-one effects varies randomly across countries, with country-level error terms denoted as V_{h0k} ($h = 1, \ldots, 5$). The school-level random intercept (β_{0jk}) is predicted by the overall intercept for country k (δ_{00k}), school-level effects for the proportion of first-generation immigrants (δ_{01k}), the proportion of students who are children

TABLE 1
Variance Components From Null Model

Model Variance Component	Trust in Civic Institutions		Attitude Toward Country		Value of Civic Behavior	
	Estimate[a]	Proportion[b]	Estimate[a]	Proportion[b]	Estimate[a]	Proportion
Country (φ_0^2)	10.28	0.10	13.46	0.14	10.59	0.11
School (τ_0^2)	5.14	0.05	6.69	0.07	3.39	0.03
Student (σ^2)	83.76	0.84	79.58	0.80	86.46	0.86
Total	99.18	1.00	99.73	1.00	100.45	1.00

[a]Because the outcome variables are standardized to a mean of 50 and a variance of 100, the variance component estimate will almost identically match the associated proportion of variance attributable to a particular level. [b]The individual proportions do not sum to zero due to rounding error.

of immigrants (δ_{02k}), the school-level average of SES (δ_{03k}), and a random effect, U_{0jk}, that allows the intercept to vary randomly between schools within a country. The country intercept (δ_{00k}) is predicted by an overall international intercept (γ_{000}) and a random country effect (V_{00k}). Similarly, all of the level-two effects are a function of an overall coefficient ($\gamma_{0r0}, r = 1, \dots, 3$) and a random term ($V_{0rk}, r = 1, \dots, 3$) that allows for random differences between countries for each of these effects. The random components have associated variance parameters of σ^2, τ_0^2 at the student and school level, respectively. Finally, each country-level random error has associated variance components denoted as φ_{h0}^2 or φ_{0r}^2 with h and r as previously defined, plus a country-level intercept variance component denoted as φ_0^2. The school- and country-level variance components express the degree to which an effect varies across schools (in the case of level-one intercepts) or countries (in the case of level-two intercepts and all level-one and -two fixed effects).

Based on the model specification just described, parameters for the effect of immigrant status estimate the difference in average achievement for first-generation immigrants compared to native-born students (γ_{100}) and for children of immigrants compared to native-born students (γ_{200}). The model does not explicitly test for differences between first-generation immigrant students and students who are children off immigrants. To examine whether there are differences in this regard, we add a linear contrast of means to our model that tests whether $\gamma_{100} = \gamma_{200}$. Equivalently, then, the null hypothesis associated with this test is

$$H_0 : \gamma_{100} - \gamma_{200} = 0$$

RESULTS

Before proceeding to the main model results, we first briefly discuss the results of fitting null models to each of the outcome variables. The estimated variance components for each outcome variable can be found in Table 1. The proportions of variance in *trust in civic institutions* attributable to the country, school, and individual-level were .10, .05, and .85, respectively. The results for the *attitude toward country* scale indicated that variance in the outcome was distributed in the following proportions: .14 between countries, .06 between schools within countries, and the remaining .80 was attributable to between-student differences. Finally, the proportion of variance in *value of*

TABLE 2
Model Results

	Coefficient (SE)		
Fixed Effect	Trust in Civic Institutions	Attitude Toward Country	Value of Civic Behavior
Intercept	50.30* (0.54)	50.85* (0.61)	49.81* (0.57)
Student Level			
1st Gen Immigrant	−0.41* (0.33)	−2.99* (0.36)	0.26 (0.42)
Child of Immigrant	−0.66 (0.15)	−2.10* (0.18)	−0.11 (0.16)
SES	0.10* (0.08)	−0.14* (0.06)	0.53* (0.06)
1st Gen × SES	−0.44* (0.20)	−0.29 (0.23)	−0.77* (0.22)
Child of Immigrant × SES	−0.31* (0.09)	−0.12 (0.11)	−0.58* (0.11)
School Level			
Proportion 1st Gen Immigrant	−0.55* (1.08)	−1.65* (0.70)	1.56 (0.83)
Proportion Children of Immigrants	−0.33 (0.47)	−2.87* (0.99)	0.31 (0.67)
M SES	−0.56* (0.25)	−1.49* (0.17)	−0.52* (0.17)
Random Effect / Variance Component			
Level 3 (Country)			
Intercept	10.94* (2.59)	13.54* (3.22)	11.91* (2.79)
1st Gen Immigrant	2.16* (0.94)	2.90* (1.07)	4.31* (2.18)
Child of Immigrant	0.43* (0.17)	0.81* (0.26)	0.56* (0.22)
SES	0.17* (0.05)	0.10* (0.03)	0.11* (0.03)
1st Gen × SES	0.45 (0.32)	0.80 (0.43)	0.57 (0.41)
Child of Immigrant × SES	0.05 (0.06)	0.20 (0.11)	0.13 (0.10)
Proportion 1st Gen Immigrant	13.91 (8.49)	0.76 (2.54)	5.21 (4.32)
Proportion Children of Immigrants	1.72 (1.52)	24.80* (7.38)	8.56* (3.59)
M SES	2.03* (0.54)	0.82* (0.26)	0.88* (0.26)
Level 2 (School)			
Intercept	4.01* (0.15)	4.20* (0.15)	2.78* (0.13)
Level 1 (Student)			
Residual	82.34* (0.33)	77.66* (0.31)	84.65* (0.34)
Linear Contrast of Means / Testing $\gamma_{100} = \gamma_{200}$			
F(1, 37)	0.50	5.03*	0.70
Fit Statistics			
−2 Log likelihood	960015.8	951434.3	973139.1

Note. 1st Gen = first generation; SES = socioeconomic status.
*$p < .05$.

civic behavior at each of the three levels was .11, .03, and .86 at the country, school, and student-levels, respectively. In each case, the variation attributable to between-country and between-school differences was sufficient to justify a multilevel modeling perspective (Hox, 1998).

We turn now to the results for fitting the full, three-level models to each of the outcome variables. The parameter estimates for all three models can be found in Table 2.

Trust in Civic Institutions

Based on the model results, first-generation immigrants have trust in civic institutions that is similar to their native-born peers $\hat{\gamma}_{100} = -.41, t\,(37) = -1.25, p = .22$. The same is not true of students who are children of immigrants. Instead, these students tend to score lower on the trust scale than native-born students $\hat{\gamma}_{200} = -0.66$, 95% confidence interval (CI) $= (-0.95, -.37)$. And based on the linear contrast of means, first generation immigrant students and children of immigrant students are no different in their trust of civic institutions $F\,(1, 37) = .50, p = .48$. Further, the effect of SES is not statistically significant $\hat{\gamma}_{300} = 0.10, t\,(37) = 1.24, p = .22$; however, when the main effect for SES is considered in conjunction with the interaction term, we find evidence that, for higher levels of SES, students with an immigration background score lower on trust scale $\hat{\gamma}_{400} = -0.44$, 95% CI $= (-0.84, -.04)$; $\hat{\gamma}_{500} = -0.33$, 95% CI $= (-0.50, -.13)$. In other words, immigrant students from higher socioeconomic backgrounds tend to have less trust in civic institutions than native-born students of similar SES, and also less trust than students with an immigrant background from lower SES. At the school level, there was no association between the proportion of students from an immigrant background in the school and trust in civic institutions $\hat{\gamma}_{010} = -0.55, t\,(37) = -.50, p = .62$; $\hat{\gamma}_{020} = -0.33, t\,(37) = -.69, p = .50$. In contrast, the higher the average SES in the school, the lower the average trust in civic institutions $\hat{\gamma}_{030} = -0.56$, 95% CI $= (-1.05, -.07)$. And according to the results for the variance components, the following parameters vary across countries: the average value of trust in civic institutions, the effect of being a first-generation immigrant or the child of an immigrant, and the effect of SES at both the student and school level. Further, the average value of trust in civic institutions varied across schools within a country.

Attitude Toward Country

According to the results for the outcome variable *attitude toward the student's resident country*, several findings emerged. In particular, both first generation immigrant students and students who are children of immigrants have poorer attitudes toward their resident country than native-born students $\hat{\gamma}_{200} = -2.99$, 95% CI $= (-3.69, -2.28)$; $\hat{\gamma}_{300} = -2.10$, 95% CI $= (-2.45, -1.74)$. Further, the size of these differences is notable: immigrant students tend to have scores on this scale that are 30% of a standard deviation[2] lower than native-born students whereas children of immigrants score 20% of a standard deviation lower than native-born peers. The linear contrast of means also suggested that first-generation immigrant students and children of immigrants differed in terms of their attitudes $F\,(1, 37) = 5.03, p = .03$, with first-generation students scoring lower on the attitude scale. In addition, there was a small negative effect for SES $\hat{\gamma}_{100} = -.14$, 95% CI $= (-0.26, -0.18)$; however, the interaction effects for immigrant background and SES were not statistically significant $\hat{\gamma}_{400} = -.29, t\,(37) = -1.27, p = .21$; $\hat{\gamma}_{500} = -.12, t\,(37) = -1.09, p = .28$. All school-level effects were statistically significant $\hat{\gamma}_{010} = -1.65$, 95% CI $= (-3.02, -0.28)$; $\hat{\gamma}_{020} = -2.87$, 95% CI $= (-4.80, -.94)$; $\hat{\gamma}_{030} = -1.83$, 95% CI $= (-1.83, -1.16)$. Taken together, we can interpret these school-level findings such that higher average SES and higher proportions of students from immigrant backgrounds are predictive of poorer average attitudes toward the resident country. The estimated variance components suggest that average attitudes, the student-level effect of being from an immigration background, the effect of SES at both the student- and school-level, and the effect of the proportion of children of immigrants all vary across countries. Finally, average attitudes vary across schools within a country.

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[2] Recall that the outcome variables are scaled to a mean of 50 and a standard deviation of 10.

Value of Civic Behavior

The last model fit to the ICCS data examined the outcome variable *value of civic behavior*, the findings of which we discuss presently. According to the results, we found that both first generation immigrant students and children of immigrants tend not to differ in terms of their value of civic behaviors such as voting and belonging to a political party $\hat{\gamma}_{100} = .26$, $t\,(37) = 0.63$, $p = .54$; $\hat{\gamma}_{200} = -0.11$, $t\,(37) = -0.67$, $p = .50$ when compared to their native-born peers. Further, there are no differences between first generation students and children of immigrants on valuing civic behavior ($F\,(1, 37) = 0.70$, $p = .41$). We found evidence of a positive effect for SES $\hat{\gamma}_{300} = .53$, 95% CI $= (0.40, 0.65)$; however, being from an immigrant background moderates that effect $\hat{\gamma}_{400} = -.77$, 95% CI $= (-1.19, -0.34)$; $\hat{\gamma}_{500} = -.58$, 95% CI $= (-0.79, -0.37)$. Taken together, these findings suggest that the relationship between immigrant status and value of civic behavior depends on SES. Although there are no differences between native and immigrant students from average SES backgrounds, differences emerge at both the high and low ends of the SES scale. Specifically, native students tend to have a greater value of civic behavior at higher ends of the SES spectrum. In contrast, poorer students from an immigration background tend to value civic behavior more than similarly poor native students. At the school-level, the proportion of children from an immigrant background was not associated with average scores on the value scale $\hat{\gamma}_{010} = 1.56$, $t\,(37) = 1.88$, $p = .07$; $\hat{\gamma}_{020} = 1.56$, $t\,(37) = 0.46$, $p = .64$; and average SES was negatively associated with valuing civic behavior $\hat{\gamma}_{030} = -.52$, 95% CI $= (-.86, -.18)$. The estimated variance components provide evidence that average scores on this scale vary across country, as do the effects of being a child of an immigrant, SES, and the proportion of students from immigrant backgrounds. At the school level, average scores on this scale vary across schools within a country.

DISCUSSION AND CONCLUSION

As societies become more diverse and people increasingly traverse national boundaries, countries consider it important to foster environments where residents are bound together through specific attitudes, behaviors, and rules rather than forcing notions of citizenship through pure coercion. In other words, nations depend on establishing and maintaining some sort of national identity to hold an increasingly diverse citizenry together. This effort is akin to the legitimizing process that Offe (1984) described as essential to the nation-state's well-being. In this article we have argued that the introduction of immigrant populations, partly accelerated by global forces, has made the nation-state's goal of integrating populations increasingly difficult and that many nations and international organizations have turned to the concept of social cohesion as a way of mediating these processes (Hulse & Stone, 2007; OECD, 2011). Particularly in a context of growing global poverty, "strengthening social cohesion [has become] a critical policy objective" for governments around the world (OECD, 2011, p. 19). Although the literature has shown that some systems appear to perform better than others at building social cohesion (Heyneman, 2000), precisely how a nation-state becomes more socially cohesive is not well understood. Despite the lack of definitive factors associated with social cohesion, we have argued that many researchers and policymakers see schools as locations to promote a more socially cohesive society, often looking to these social institutions as spaces to promote ideas related to social cohesion, including increased trust in civic institutions, attitude toward the resident country, and value of civic behavior.

Our literature review also noted that current research has reported little international evidence on how immigrant students view ideas around social cohesion compared to their native-born peers. In response to this lack of understanding and consensus, we attempted to examine how students with an immigrant background differed in terms of attitudes and behaviors that align with ideas of social cohesion in comparison to their native peers. Further, in examining the link between immigration status and social cohesion, we explored whether differences in SES moderated the relationship. At the international level, our findings suggest that there are, in fact, dissimilarities among student groups and that it may be necessary to focus interventions between native-born and nonnative-born students. But the story is much more complex than simply looking at where a student was born. In fact, the SES of the student also appears to play an important role in how a student feels about the country where they are living. This finding is in line with early and important ideas of globalization such as those of Bauman (1996), who suggested that immigrant populations differ greatly and can be further differentiated by their SES, coining immigrant groups either tourists or vagabonds. As discussed earlier, tourists tend to navigate borders with ease, often being accepted within communities, whereas vagabonds are seen as a drain on social systems even though they may provide necessary labour for their host country.

This important distinction between high SES and low SES immigrants demonstrates an added complexity to the social cohesion conversation and suggests another variable that should be attended to in policy discussions. For example, our findings show that the difference between immigrant and native students' trust in civic institutions changes significantly as SES increases. In particular, trust in civic institutions diminishes for children with an immigrant background as SES increases. Although there is no difference overall between native-born students and their foreign-born peers' value of civic behavior, this relationship is moderated by SES. This finding supports Bauman's distinction and suggests that other factors along with immigrant status should be taken into consideration when focusing policies at improving social cohesion and the integration of diverse student populations in schools.

Our findings related to the impact of SES on social cohesion among native and immigrant students then point to the importance of clarifying and broadening definitions of social cohesion. In some of the World Bank and OECD's work in the 1990s on social cohesion, poverty reduction and SES were central to the discussions taking place on social cohesion (Narayan, 1999; OECD, 1997, 1998). Further, within recent policy literature on social cohesion, a narrower association has been made between social cohesion and racial and ethnic identity, and in some cases (e.g. England), religious identity (Cantle, 2005; Commission on Integration and Cohesion, 2006; Engel, Kington & Mleczko, 2013). According to Appadurai (2006), this focus is part of the growing societal anxiety around ethnic minority groups associated with some of the by-products of globalization: increased immigration, inequality, and exclusion. In many countries, policymakers have increasingly responded to the heightened societal anxiety on the rise of immigrant populations, particularly those considered of "vagabond" status. Using Appadurai's words, this "fear of small numbers," brings yet another challenge to school systems tasked with managing their increasingly diversifying populations and using education as a means for greater social cohesion. If one of the goals of schooling is to increase socially cohesive attitudes and behaviors, then broader notions of social cohesion that also consider SES, rather than emphasizing only race, ethnicity, or immigration status alone, become important.

Recent events such as the Boston Marathon bombing in the United States, where naturalized citizens allegedly performed these horrible acts, illustrate the complex relationship between immigration, societal anxiety over culturally diverse populations, issues of marginalization, and violence. Events such as these tend to underscore debates about social cohesion and the importance of education, which is considered among the best ways to build social cohesion. Education builds social cohesion through communicating social rules, providing experiences with local citizenship activities, ensuring equal opportunities to all students, and balancing the interests of diverse communities with a common understanding of citizenship (Heyneman, 2010). In this context, our findings suggest the importance of understanding the impact of SES on the attitudes of foreign and native-born youth toward their resident country, the value they have on civic behavior and their trust in civic institutions. Overall, social cohesion is a slow process involving changing attitudes, building trust, confidence, legitimacy, unity, and mutual respect across students and families from different cultural and ethnic backgrounds. Schools can serve as powerful institutions to change attitudes, foster links between family, school and community, and cultivate trust and confidence in civic institutions. As shown from this study, as national and school-level policies and thinking about social cohesion continues to develop, a focus on SES as a way to better understand the experiences and needs of immigrant students may be useful.

Of course, empirical studies that use extant data necessarily suffer from limitations, which we note here. First, given the ambiguity surrounding definitions of social cohesion, our operationalization of this term is one of many possibilities. Another choice of variables could have resulted in other findings; however, we observed that, regardless of the indicator chosen to represent notions of social cohesion, we consistently found differences between native-born students and students with an immigration background. Second, the ICCS data are observational, cross-sectional data, which limit causal inferences regarding the nature of the relationships. It is worth noting that in spite of these limitations, the ICCS data comprised a large sample of diverse countries with different economic, ethnic, and cultural compositions. Even in the face of such diversity, our findings point to an international pattern of difference in social cohesion indicators among student groups that depends on both immigrant status and SES. We note in closing that large-scale data sets such as ICCS (among others) provide a unique opportunity to examine international education policy issues and to promote cross-national dialogue among policymakers in an effort to identify possible solutions that can be tailored for the unique national context in which these phenomena occur.

AUTHOR BIOS

Laura C. Engel is an assistant professor of international education and international affairs at The George Washington University in Washington, DC, U.S. She earned a PhD in Educational Policy Studies, specializing in Global Studies in Education, from the University of Illinois at

Urbana-Champaign. Her research in international and comparative education focuses broadly on globalization in education. Her recent research focuses on the policy influence of international testing and cross-national comparisons of education, educational policies and practices that enhance inclusion and equity specifically for immigrant populations, and the internationalization of education.

Leslie Rutkowski is an assistant professor of Inquiry Methodology in the Department of Counseling and Educational Psychology at Indiana University, Bloomington, USA. She earned her PhD in Educational Psychology with a specialization in Statistics and Educational Measurement from the University of Illinois at Urbana-Champaign. Leslie's research is focused in the area of international large-scale assessment from both methodological and applied perspectives. Her interests include the impact of background questionnaire quality on achievement results, latent variable models for achievement estimation, and examining methods for comparing heterogeneous populations in international surveys.

David Rutkowski is an assistant professor of Educational Policy in the Department of Educational Leadership and Policy Studies at Indiana University, Bloomington, USA. His research interests include how large scale assessments are used within policy debates, the impact of background questionnaire quality on achievement results, and topics concerning immigrant students at the international level.

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APPENDIX
Table of Participating Countries with Sample Sizes and Means on Outcomes

Countries	N	Attitudes Towards Own Country	Trust in Civic Institutions	Conventional Citizenship
Austria	3368	51.81	52.68	47.92
Bulgaria	3243	48.35	48.15	48.43
Chile	5168	50.13	49.75	50.99
Chinese Taipei	5151	46.63	47.94	50.18
Colombia	6185	55.27	49.40	51.98
Cyprus	3172	49.01	45.31	53.18
Czech Republic	4622	44.56	48.16	43.97
Denmark	4444	48.45	52.03	47.61
Dominican Republic	4519	56.68	54.20	55.12
Estonia	2728	49.04	47.95	46.98
Finland	3289	51.87	53.33	45.08
Greece	3129	46.06	45.01	49.45
Guatemala	3982	53.86	47.19	54.55
Hong Kong SAR	2873	46.85	51.30	51.64
Indonesia	5057	58.46	58.81	55.72
Ireland	3266	50.48	49.16	50.05
Italy	3342	48.42	52.15	54.37
Korea, Republic of	5249	44.67	43.10	52.54
Latvia	2754	43.30	44.56	49.72
Liechtenstein	355	51.58	55.02	47.90
Lithuania	3892	46.31	47.87	50.52
Luxembourg	4799	49.04	50.94	48.56
Malta	2112	50.09	51.91	49.67
Mexico	6519	52.37	48.67	54.00
Netherlands	1950	46.54	51.53	46.70
New Zealand	3932	51.31	50.31	48.32
Norway	2969	52.10	52.92	51.32
Paraguay	3354	52.07	49.62	52.46
Poland	3238	48.12	45.02	50.85
Russian Federation	4285	53.19	52.14	52.58
Slovak Republic	2965	47.75	48.29	45.33
Slovenia	3062	50.60	48.52	46.38
Spain	3286	47.94	49.71	48.92
Sweden	3436	48.32	52.05	45.72
Switzerland	2911	51.37	50.88	48.41
Thailand	5246	58.86	55.72	57.64
England	2900	47.15	50.80	48.27
Belgium (Flemish)	2943	43.91	49.52	45.63

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Are Student Protests in Arab States Caused by Economic and Political Grievances? Empirical Evidence from the 2006–07 *Arab Barometer*

M. Najeeb Shafiq, Jessica Mason, Taylor Seybolt, and Kristin DeLuca
University of Pittsburgh

We investigate the nature of protests by students (age 18 and older) in Algeria, Jordan, Morocco, and Yemen by using subsamples of students from nationally representative and acclaimed public opinion data (the 2006–07 *Arab Barometer*). We find between 22.1% (Jordan) and 54.7% (Yemen) participated in either the signing of petitions, or marching in street protests, or both between the years 2003–07. To explain student protest participation, we draw from the political economy literature to test four grievance-based hypotheses that link protest to student perceptions on the performance of the economy, personal family socioeconomic status, political exclusion, and preference for democracy. Ordered probit regression analyses indicate that students protest for different reasons in the four countries. We find statistical evidence that student protests are associated with grievances about the economy (Algeria and Morocco) and lack of democracy (Algeria only). Joint hypothesis tests reveal that the four grievances jointly matter in Algeria, Morocco, and Yemen but not Jordan.

INTRODUCTION

Postsecondary students have threatened or even toppled regimes around the world (Altbach, 1989). Prominent examples from the 20th century include student protests in Spain against Dictator Franco's rule (1939–1975), in the United States against the Vietnam War (1960s), in China's Tiananmen Square against the Communist Party's reform efforts (1989), and in South Korea's march toward democracy (1970–1992). In 2010–2011, protests by students and others in several countries in the Middle East and North Africa, collectively referred to as the "Arab Spring," transformed the political, economic, and social landscape on a scale that has not been witnessed since the fall of communism (Ottaway & Hamzawy, 2011).

In this study, we investigate the reasons for protests by secondary and postsecondary students (age 18 and older) in four states that experienced the Arab Spring: Algeria, Jordan, Morocco, and

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Correspondence should be sent to M. Najeeb Shafiq, School of Education and Department of Economics, 230 South Bouquet Street, 5907 Posvar Hall Pittsburgh PA 15260. Email:mnshafiq@pitt.edu

Yemen. We draw from the recent political economy literature arguing that protest participation occurs because of economic and political grievances. Using subsamples of students from nationally representative public opinion data, we test four grievance-based hypotheses that link student protest participation to their perceptions on the performance of the economy, personal family economic condition, political exclusion, and preference for democracy.

Unlike previous research on student protest participation in developing regions, we have access to highly regarded data: the 2006–07 *Arab Barometer*. The American Political Science Association recognized the *Arab Barometer* team by awarding them the 2010 Lijphart/Przeworski/Verba Dataset Award for Best Dataset in the field of Comparative Politics. Because the data collection preceded the Arab Spring, we can address the origins of one of the least expected and most effective student protest movements in recent history.

We make several contributions to the student protest literature (for a review, see Knutsen, 2007). First, our study examines student protests in the 2000s, whereas much of the existing research has documented protest during the period from 1960 to 1990. Second, we contribute to the scarce empirical literature on student protests. Third, our study is comparative, rather than focusing on a single country. Finally, most studies have explored institutional or student characteristics that influence participation in a specific campus protest. In contrast, we combine the student protest literature with the broader political economy literature to examine the broader political and economic determinants of protest behavior.[1]

CONTEXTUAL BACKGROUND

Economic Indicators and Political Regimes

Several observers have argued that weak economies have been responsible for protests and other forms of unrest in Arab states (Council on Foreign Relations, 2011, p. 136). We begin our investigation, therefore, with an overview of the four countries' economies and systems of government.[2] Comparing the 1991–2000 and 2001–08 periods, economic growth rates improved for Algeria (1.7–4%), Jordan (5.2–7%), and Morocco (2.6–5.1%) but weakened for Yemen (5.6–3.9%). In terms of PPP-adjusted income, Algeria ($6,160) and Jordan ($4,629) are upper middle income, whereas Morocco ($3,507) and Yemen ($2,428) are lower middle income. Morocco has the lowest poverty rate (9%), followed by Jordan (19%), Algeria (22.6%), and the region's highest rate in Yemen (41.8%). These figures, however, do not reflect the economic volatility that arose partly because of the transition from primarily state-supported economies to market-based economies.

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[1] In particular, our study contributes to the limited microlevel research on political behavior in developing countries (Berman, Callen, Felter, & Shapiro, 2011; Jamal & Tessler, 2008). In a review of the literature, Knutsen (2007) only listed studies from India and Latin America. Most of the recent research is found in the sociological and political science literature but does not focus specifically on student involvement.

[2] Figures are for 2008 unless otherwise noted. PPP Converted GDP Per Capita (Laspeyres), derived from growth rates of c, g, i, at 2005 constant prices. Alan Heston, Robert Summers and Bettina Aten, Penn World Table Version 7.0, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, May 2011. Site: data.worldbank.org.

Politically, Algeria is a semipresidential republic where Abdelaziz Bouteflika came into power during emergency rule in 1999. Jordan is a constitutional monarchy that was previously ruled by King Hussein (1952–1999) and is now under the reign of his son, King Abdallah (1999–present). Morocco is a constitutional monarchy with bicameralism where King Mohammad VI (1999–present) succeeded to the throne after the death of his father, King Hassan II (1961–1999).[3] Yemen is a republic where Ali Abdullah Saleh (the president of North Yemen) assumed the presidency of the newly unified North Yemen and South Yemen in 1990. The 2011 Economist Intelligence Unit's Democracy Index rankings reveal some differences, with Jordan (rank 118) and Morocco (rank 119) considered more democratic than Algeria (130) and Yemen (150). During the Arab Spring, regime change occurred in Yemen (Economist Intelligence Unit, 2011).[4]

Higher Education and Protests in Algeria, Jordan, Morocco, and Yemen

The literature on student protests indicates that factors within an education system matter when explaining protest participation (Munson, 2010; Zhao, 2009). The *Arab Barometer* does not include data on characteristics of educational institutions and thus does not allow us to statistically test their effect in this context. Nonetheless, the anecdotal evidence that follows is consistent with the literature.[5]

In general, higher education systems in the Middle East and North Africa face significant challenges (Heyneman, 1997; World Bank, 2008). The 2010 regional gross enrollment rate average was 24%. Research indicates that there is a "reluctance to change and innovate, poor organizational frameworks, traditional management systems, financial dependence on governments, and lack of autonomy and academic freedom for universities" (Sawahel, 2012). For a population of 400 million people in the region, there are just 470 universities and institutions currently serving 9 million students, with only one in five enrolled in scientific programs (Sawahel, 2012). Furthermore, persisting colonial legacies, particularly in North African countries, are at the root of problems with access, language of instruction, curriculum, and academic freedom (Teferra & Altbach, 2004).

Gross enrollment rates (GER) for the four countries indicate varying degrees of access to higher education. In Algeria, the GER grew from 14% in the 1990s to 31% in 2010 (UNESCO Institute for Statistics [UIS], 2011a). Education accounts for 20.3% of government expenditures, with 22% of that going to higher education, including grants for 85% of Algerian students (UIS, 2011a; European Commission, 2010a). As enrollment rises, Algeria is focusing on increasing public funding with plans to "spend US$1.48 billion on higher education and science over the next five years and to double research spending to 1% of gross domestic product" (Racelma, 2012). Despite the growing education sector, students across the country have protested against changes in higher education policy affecting the student experience and employment prospects. In 1998, Algerian student unions at universities were involved in strikes against changes in university policy, followed by protests in 2000 in the city of Tizi Ouzou by students contesting deteriorated physical conditions on university campuses (Madani, 2000). In 2011, students in Algiers protested higher education policy they believed devalued university diplomas ("Algerian Students Revolt," 2011).

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[3] Bicameralism is a feature of a mixed government that includes the practice of having two legislative or parliamentary chambers compromise bills.

[4] In terms of population size, Jordan has the smallest population (6.1 million) followed by Yemen (22.2 million), Morocco (30.9 million), and Algeria (33.8 million). A distinguishing characteristic of the populations is the youth bulge: the median age ranges from 17.9 years (Yemen) to 26.5 years (Jordan).

[5] Because the *Arab Barometer* subsample of students includes only those who are of age 18 and older, we focus on providing a background of the higher education systems.

Jordan's GER increased from 22% in the 1990s to 38% by 2010 data (UIS, 2011b). Education accounts for 20.6% of government expenditures, with 23% of that going to higher education (UIS, 2011b). Higher education in Jordan is fee-based with limited financial support for students (European Commission, 2010b). Currently, Jordan is promoting the development of its community colleges to meet the needs of its growing youth population and address its shortage of workers with midlevel vocational skills. Nevertheless, Jordanian students protested in 2000 against higher education policy allowing the government to appoint members of university student councils ("Jordan's Students Protest," 2000).

In Morocco there was very little growth in the GER, from 10% in the 1990s to 13% in 2009 (UIS, 2011c). Public higher education in Morocco is paid for by the government, which spends 25.7% of its budget on education, with 15% of that going to higher education (UIS, 2011c). There is, however, a mismatch between acquired skills and labor market needs, leading to protest by jobless graduates. Students have also protested against university administrative decisions, as was the case in 1984 when students in northern Morocco participated in violent protests against increased school and final examination fees and more stringent admissions standards (Randal, 1984).

Data and information on higher education in Yemen is somewhat limited. There was a fourfold increase in enrollments in the 1990s; although expansion has continued, accounting for population growth, GER has remained stagnant at 10% as of 2010 (UIS, 2011d; World Bank, 2011). The public system is fully state funded, with education accounting for 16% of government expenditures; the higher education allocation was not reported (UIS, 2011d). Financial allocations have not been able to keep pace with expansion, which has led to increased student–staff ratios (24:1 to 41:1) and deterioration of educational facilities and resources (World Bank, 2011). Although students in Yemen protested raises in school fees in 1999 ("Students Injured in Yemen Clash," 1999), protests in Yemen and Jordan have been less prevalent than in Morocco and Algeria.

In summary, student protests in the four states have been attributed to factors associated with higher education institutions (e.g., fees and quality). There is also evidence that students have taken to the streets to express economic and political grievances. In the remainder of this study, we focus on conceptual and empirical inquiry into the economic and political grievances of students and their resulting participation in protests.

CONCEPTUAL BACKGROUND AND HYPOTHESES

To understand the concept of protest, it is useful to distinguish it from other possible political outcomes. Broadly, political outcomes can be categorized into three sets: attitudes, expertise, and engagement (Emler & Frazer, 1999). Political attitudes include tolerance–intolerance, partisanship, and attitude stability (regarding political identity). Political expertise consists of relevant skills (organization, listening, speaking, writing, and collective decision making), propositional knowledge (such as knowledge of the constitution, policy, ideology, current affairs, and history), interest in politics, understanding of power and authority, and sense of political efficacy. The final category of political engagement includes participation in activities such as voting, contacting, campaigning, and protesting.[6]

Given that our data are on individuals and not groups, we develop theories that address why individual students participate in protest activities. In this section, we draw from the recent political economy literature on grievance-based explanations of protest participation. In addition, we provide a link between grievance-based theories and prevailing social movements and social reproduction-based theories of student protest participation.

Economic Grievance

Research has suggested economic grievance can lead to protest participation through mechanisms of frustration with macroeconomic policies and personal economic conditions. Dalton, Van Sickle, and Weldon (2010) demonstrated the importance of macrolevel economic influences on protest participation among the general public, particularly in developing countries, where "personal dissatisfaction may represent severe economic deprivation or the struggles to survive" (p. 57). Muller, Dietz, and Finkel (1991) studied protest participation among university students in Peru and found that relative deprivation of socioeconomic status was a strong predictor for participation. Almeida (2007) used newspaper content analysis to examine student protest participation in Latin America as the region experienced the structural adjustment policies of the 1990s. He found the highest levels of participation among the working and middle classes and concluded, "At the core of this new motivational structure were perceived threats to economic benefits" (p. 124). Anecdotal evidence from the four states also suggests that students protest because of macroeconomic issues such as austerity measures. For example, protest among unemployed students has been common in Morocco, including the 1984 protests and the 2008 student protests that shut down the port at Sidi Ifni in response to job shortages for graduating students ("Poor Quality Education Threatens Stability," 2008). We state the hypothesis that relates grievance about the performance of the economy and student protest as follows:

> H1: Students protest against their government when they associate their own economic hardship with the government's macroeconomic policies.

A competing argument is that macroeconomic policies and the overall condition of the economy do not drive people to protest; instead, people protest when they personally are not doing well. "The correlation between low per capita incomes and higher propensities for internal war is one of the most robust empirical relationships in the literature," although there is no consensus on the mechanisms that connect income and conflict (Blattman & Miguel, 2010, p. 4). We refine the finding of a connection between conflict and low per capita income (a country-level variable) by investigating the relationship between individual participation in protest and economic wellbeing at the student family level.

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[6] Protest participation does not necessarily imply benevolent, selfless, or socially conscious behavior; rather, it may be that protest participants are mainly concerned with improvements in their own outcomes. It is not possible to decipher from the data or the anecdotal country evidence the true individual motives behind protest participation. In our study, it is unclear if respondents are mainly concerned with improving their own labor market and family status, or broader labor market and family status.

> H2: Students protest against their government when they believe their families' economic situations are poor.

Political Grievance

Political grievance is another prominent and intuitively appealing explanation for opposition to the government. It is the perception that one is excluded from, or has limited access to, political power (Lake & Rothchild, 1996; Levy & Thompson, 2010, Lijphart, 1977). A great deal of student protest in Algeria since the 1980s has been focused on Algerian government policy on the adoption of Berber as an official language and treatment of the northern region of Kabylia (Magistad, 1987). Limited ability to influence decisions about the distribution of public goods and patronage benefits is thought to incite feelings of grievance (Blattman & Miguel, 2010; Langer, 2005; Reynal-Querol, 2002; Scacco, 2008). Muller et al. (1991) argued that dissatisfaction with the "current provision of public or collective goods" was a strong predictor of protest participation, based on West German panel data in the 1980s. Among the purported reasons for the Arab Spring was "frustration with closed, corrupt, and unresponsive political systems" (Goldstone, 2011, p. 8). We expect students who protest to feel they have inadequate access to authority figures or too little influence on government policies. These arguments about the effect of political grievance in the form of political exclusion can be expressed by the following hypothesis:

> H3: Students protest against their government when they are aggrieved due to political exclusion.

The popular narrative of the Arab Spring asserts that the people took action because they wanted democracy (Gause, 2011). General frustration with political exclusion is not considered an adequate explanation for protest participation, according to this view, because people are not seeking better access within the prevailing system; they want democracy. Gause (2011) argued that for many years Arabs have not passively accepted authoritarian rule and have voted enthusiastically when given real electoral choices. If protest participation is linked to a desire for democracy, we expect student respondents to speak favorably about democracy as a governing process for their country. The resulting hypothesis linking political grievance about the lack of democracy and student protest is as follows:

> H4: Students protest against their government when they want democracy in their country.

DATA AND MEASUREMENT

The data for Algeria, Jordan, Morocco, and Yemen come from the 2006–07 *Arab Barometer* project, which is a collection of nationally representative public opinion surveys. The surveys were collected in the 2006–2008 period. The contents of the *Arab Barometer* are similar to public opinion surveys such as the *World Values Surveys*, and the regional *Asian Barometer*, *Afro-Barometer*, and *Latinobarómetro*. According to its key investigators, the *Arab Barometer* project was motivated by the belief that the political attitudes and values of ordinary men and women is important for scientific inquiry and the dispelling the myths and stereotypes that hinder mutual understanding and cooperation (Tessler & Jamal, 2006). The key investigators of the *Arab Barometer* project were based at the University of Michigan and Princeton University and joined by country team leaders and steering committee members from universities and research centers from each of the participating countries.[7]

The original 2006–07 *Arab Barometer* contains samples of adults of age 18 and older. We restrict our analysis to subsamples of individuals who identified themselves as "student." Regarding education, the *Arab Barometer* asked all respondents, "Level of education?" with seven options: illiterate, elementary, primary, secondary, college diploma–2 years, BA, MA, or higher. However, this question is unclear about a respondent's current or completed level of education; for example, if a student responds "BA," we do not know if she is currently pursuing a BA or has already completed her BA. Given this ambiguity, we do not explore differences in student protest participation across educational levels.

We define protest participation as signing a petition, attending a demonstration or protest march, or both at least once during the preceding 3 years. In reporting protest activities for the past 3 years, respondents were given options of "once," "more than once," and "never." We combined the "once" and "more than once" categories because of the relatively small share of responses in the "once" category. Table 1 matches our hypotheses with the specific questions we use from the *Arab Barometer* survey to measure the outcome, explanatory, and control variables.

The outcome variable *PROTEST*=0 if the student had not participated in any form of protest in the past 3 years. *PROTEST*=1 if the student had signed a petition only once or more than once. *PROTEST=2* if the student had attended a demonstration or protest march (the student may or may not have also signed a petition) in the past 3 years. A higher value of the *PROTEST* variable reflects the riskiness of the protest activity. In other words, we consider not protesting to be the least risky activity, and marching in a demonstration riskier than signing a petition because protesters are more vulnerable to attacks from the authoritarian regime's security forces. *PROTEST* is therefore an ordinal variable such that the data are mutually exclusive (i.e., there is just one outcome value for each student), the order of the rank is meaningful (i.e., a higher score reflects the riskiness of protest), and the scale values are not equally distant (i.e., *PROTEST*=2 does not imply that marching is twice as risky as signing a petition). Given the ordered, discrete, and quantitative nature of *PROTEST*, we use an ordered probit regression model (Long & Freese, 2006).

The explanatory variables correspond to our four hypotheses. To measure perception of macroeconomic policies, we use a survey question that asks about the respondents' expectation for the country's economic condition in 3 to 5 years. Our proxy for the student's personal economic situation is a question that asks the respondent to rate his or her family's current economic condition. Political exclusion is measured with a question that asks respondents to agree or disagree that government officials seriously consider citizen's opinions. To measure the desire

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[7] The data are publicly available from the official *Arab Barometer* website (http://www.arabbarometer.org). The quote was also obtained from this page (last accessed on October 15, 2012). Three countries from the 2006–07 *Arab Barometer* are excluded in this study: Lebanon, Kuwait, and the Occupied Palestinian Territories (OPT). Lebanon is excluded because it is already a democracy. Kuwait is unusually wealthy and has not taken efforts to remove its rulers. OPT was not trying to bring down an authority. International news organizations such as the BBC have also not included Lebanon, Kuwait, and OPT as countries experiencing protests (http://www.bbc.co.uk/news/world-12482293)

TABLE 1

Arab Barometer Questions Used to Measure Outcome, Explanatory, and Other Control Variables

Outcome variable:	
Protest participation	"Here is a list of actions that people sometimes take as citizens. For each of these please tell me whether you, personally, have ever done each of these things in the past three years." Among the statements that were read was: "Attend a demonstration or protest march." (0 = *never*, 1 = *once*, 2 = *more than once*)
Explanatory variables:	
Economic grievance	H1: Students protest against their government when they associate their own economic hardship with the government's macro-economic policies. *Arab Barometer* question: "What do you think will be the state of [country name]'s economic condition a few years (3–5 years) from now?" (1 = *much better*, 2 = *a little better*, 3 = *about the same*, 4 = *a little worse*, 5 = *much worse*)
	H2: Students protest against their government when they believe their family's economic situation is poor. *Arab Barometer* question: How would you rate the economic condition of your family today? (1 = *very good*, 2 = *good*, 3 = *bad*, 4 = *very bad*)
Political grievance	H3: Students protest against their government when they are aggrieved due to political exclusion. *Arab Barometer* question: Do you agree/disagree with the following statements: 3. Government officials seriously consider citizens' opinions? (1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, 4 = *strongly disagree*)
	H4: Students protest against their government when they want democracy in their country. *Arab Barometer* question: Tell me what you think about a democratic political system that includes public freedom, equal political and civil rights, balance of power, accountability and transparency (1 = *very bad*, 2 = *bad*, 3 = *good*, 4 = *very good*)
Control variables:	
Female	0 = *male*, 1 = *female*
Age	Exact age
Higher education	0 = *secondary education or below*, 1 = *higher education*

for democracy, we use a question from the *Arab Barometer* that asks the student's opinion about a democratic political system.

We include a number of control variables that are typically included in empirical studies of protest participation. A gender dummy variable is included because of the large body of comparative literature that indicates that men and women participate politically in different ways (Inglehart & Norris, 2003). The age variable permits us to explore whether protest participation is related to age. We further include a dummy variable to distinguish higher education students versus secondary education students. Ideally, we would have liked to also control for characteristics of the educational institutions being attended, such as extent of support provided by the state,

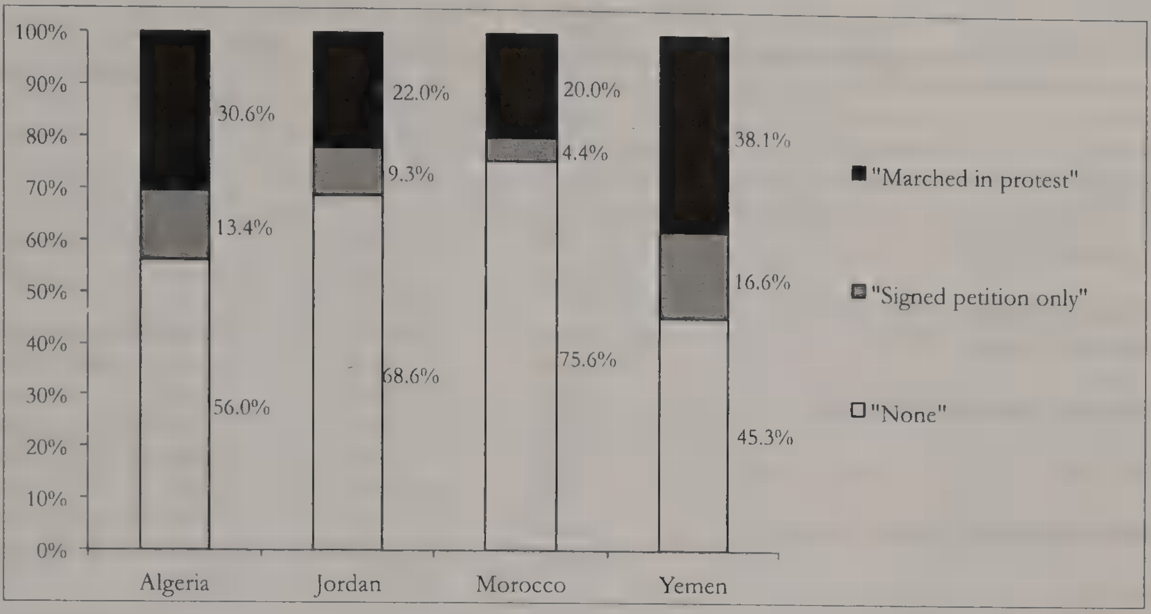

FIGURE 1 Student protest activity by country, 2004–2007. *Source:* Authors' computations based on the *Arab Barometer* 2006–07 subsample of secondary and postsecondary students (age 18 and older). The sub-samples sizes (n) for each country are as follows: Algeria ($n = 191$), Jordan ($n = 100$), Morocco ($n = 72$), and Yemen ($n = 117$).

reputation, number of political organizations, and so on. Because the *Arab Barometer* does not contain such information, there is the possibility that our regression coefficients will suffer from omitted variable bias.

RESULTS

Descriptive Statistics

Figure 1 presents the protest activities of students (age 18 and older) in the four Arab states during the 2004–07 period. There are three key findings from Figure 1. First, protest participation was common during the years preceding the Arab Spring of 2010–11 in Algeria (44.0%) and Yemen (54.7%); in contrast, protest participation was relatively unusual, although not rare, in Jordan (22.1%) and Morocco (24.4%). Second, student protest participation rates correspond to the extent of historic political unrest and recent leadership described in earlier sections. Third, the riskier form of protesting (i.e., marching in a demonstration) was approximately 1.5 to 2 times as common as the less risky form of protest (i.e., signing a petition). To put these figures in perspective, the protest participation rates for the combined samples of students and nonstudents are slightly higher (Seybolt & Shafiq, 2012): Algeria (45.0%), Morocco (33.9%), and Yemen (58.5%); this implies that students had lower protest participation rates than nonstudents in all four Arab states.

Table 2 presents the summary statistics of the outcome and explanatory variables for the student subsamples in each Arab state. The outcome variable means are consistent with Figure 1: Protest participation scores (ranging from 0 to 2) are highest in Yemen and considerably lower

TABLE 2
Summary Statistics of Student Characteristics in Arab States, 2004–2007

	Algeria *M (SD)*	Jordan *M (SD)*	Morocco *M (SD)*	Yemen *M (SD)*
Outcome variable:				
Protest participation	.728	.460	.458	1.017
	(.870)	(.784)	(.821)	(.900)
Explanatory variables:				
Economic grievance: Economy	2.681	2.250	2.653	2.889
	(.766)	(.757)	(.906)	(.908)
Economic grievance: Family status	2.377	2.200	2.194	1.940
	(.640)	(.791)	(.573)	(.620)
Political grievance: Government responsive	2.953	2.570	3.014	2.658
	(1.012)	(.844)	(.796)	(1.027)
Political grievance: Prefer democracy	3.215	3.410	3.597	3.128
	(.908)	(.621)	(.597)	(.979)
Control variables:				
Female	.445	.400	.541	.658
	(.498)	(.492)	(.502)	(.476)
Age	22.6	21.4	1.13	22.6
	(2.9)	(3.8)	(.33)	(3.3)
Higher education	.665	.170	.417	.419
	(.473)	(.377)	(.497)	(.495)
N	191	100	72	117

Note. The outcome variables is *PROTEST* (=0 have not protested in last 3 years; =1 if signed a petition in last 3 years; =2 if marched in a protest in last 3 years). Age is Algeria is reported as a series of intervals, not years. *Source*: Authors' calculations based on student subsamples of 2006–07 *Arab Barometer*.

in Jordan and Morocco. The mean scores for the grievance variables (ranging from 1 to 4) reveal several patterns. In all four states, the preference for democracy is the main form of grievance. Political grievance about government responsiveness received the next highest grievance score in Algeria, Jordan, and Morocco. In contrast, economic grievance about family status is associated with the lowest grievance scores in all four Arab states. The overall results in Table 2 suggest that, on average, student grievances in Algeria, Jordan, Morocco, and Yemen have more to do with politics than economics.

The control variable statistics in Table 2 reveal several patterns about the student populations in the four Arab states. The female indicator variable shows considerable variation in student gender composition across the four states: relatively smaller shares of female than male students in Algeria and Jordan, a slightly larger share of female than male students in Morocco, and a far larger share of female than male students in Yemen. As mentioned earlier, the *Arab Barometer* asked students about "level of education" without clarification on the completed or current level of education. It is therefore unsurprising to see considerable noise in the responses on higher education shares—ranging from 66.5% in Algeria to 17.0% in Jordan. Another reason for the differences in higher education shares could be because Jordan has younger respondents (who have not yet enrolled or completed higher education); this conjecture is supported by the fact that the mean for the age variable is lowest for Jordan in Table 2.

TABLE 3
Ordered Probit Regressions Results of Student Protest Participation in Arab States, 2004–2007

	Algeria Coefficient (SE)	Jordan Coefficient (SE)	Morocco Coefficient (SE)	Yemen Coefficient (SE)
Economic grievance: Economy	.315**	.049	.432**	-.134
	(.125)	(.201)	(.226)	(.137)
Economic grievance: Family status	−.129	−.027	−1.372**	−.063
	(.147)	(.186)	(.529)	(.206)
Political grievance: Government responsive	−.150*	−.031	.479*	−.324**
	(.087)	(.172)	(.273)	(.117)
Political grievance: Prefer democracy	.175*	.249	−.232	−.123
	(.098)	(.227)	(.292)	(.128)
Control variables:				
Female	−.339*	.064	−.338	−1.498**
	(.183)	(.284)	(.381)	(.282)
Age	.019	−.029	.879*	.009
	(.034)	(.040)	(.526)	(.044)
Higher education	−.033	.048	.250	.357
	(.208)	(.407)	(.395)	(.264)
/Cut 1	1.047	.819	.579	−2.761
	(.930)	(1.160)	(1.843)	(1.293)
/Cut 2	1.539	1.157	.762	−2.136
	(.932)	(1.163)	(1.812)	(1.285)
Pseudo R^2	.040	.012	.214	.150
N	191	100	72	117
Wald test: Grievance coefficients jointly = 0				
χ^2	10.39	1.27	10.65	8.76
p	.034	.866	.031	.067

Note. The outcome variables is *PROTEST* (=0 have not protested in last 3 years; =1 if signed a petition in last 3 years; =2 if marched in a protest in last 3 years). Robust standard errors in parentheses. *Source:* Authors' calculations based on student subsamples of *Arab Barometer*.

** Statistically significant at .05 level. *Significant at .10 level.

Ordered Probit Regression Results

The coefficients in Table 3 should be interpreted as follows. A positive and statistically significant coefficient provides support for a hypothesis. In contrast, a negative and statistically significant coefficient indicates that a hypothesis is rejected for the country in question. A statistically insignificant coefficient suggests that there is insufficient statistical evidence in support of the hypothesis, holding all other characteristics constant. Furthermore, the coefficients reveal student propensities to participate in a riskier form of protest (as discussed earlier, not protesting is least risky, petition signing is medium risk, and marching in a protest is high risk).

Column 1 in Table 3 presents the ordered probit regression results for Algeria. There is statistical support for the economic grievance hypotheses. However, the results indicate that economic grievance about the family status is unrelated to protest participation, holding other factors constant. The findings for political grievances are also mixed. Feelings of political exclusion are negatively related to protest participation, holding other characteristics constant; we therefore reject the hypothesis that political exclusion is associated with student protest. Preference for democracy, however, is associated with a higher likelihood of protest participation among students, holding other grievances and factors constant. The overall results for Algerian student protestors are consistent with the narrative that protestors in Algeria have been motivated by macroeconomic concerns and democratic reform.

Column 2 in Table 3 shows the ordered probit regression results for Jordan. Curiously, there is no statistical evidence in support of any of the grievance hypotheses. In other words, there is no evidence that economic grievances (about the economy and family status) or political grievances (about exclusion and preference for democracy) are related to student protest participation in Jordan. These findings are unexpected because protests in Jordan have traditionally coincided with economic downturns and calls for greater democracy.

Column 3 in Table 3 presents the ordered probit regression results for Morocco. The results suggest that macroeconomic grievance is associated with higher student protest participation, holding other grievances and characteristics constant. Surprisingly, grievance regarding family economic status is negatively associated with student protest participation. Thus, we reject the economic grievance hypothesis that students protest against their government when they believe their family's economic situation is poor. This inverse relationship between low family economic condition and student protest may be attributable to poor Moroccans feeling demoralized about contributing to political change. Turning to political grievance explanations, there is evidence that students participate in protest when they feel politically excluded. Preference for democracy in Morocco, however, is not statistically associated with student protest participation.

Last, column 4 in Table 3 presents the ordered probit regression results for Yemen. There is no statistical support for the economic grievance hypotheses that students protest against their government when they believe their economy or personal economic situation is poor. Contrary to the political grievance hypothesis on political exclusion, we find that students who feel politically excluded are less likely to participate in protests; we therefore reject the hypothesis on grievance of political exclusion and protest participation in Yemen. A likely explanation for this result is that politically excluded students feel disenfranchised and helpless in bringing about political change. There is also no statistical support for the hypotheses that students in Yemen participate in protests against their government because they prefer a democracy.

So far, our results have indicated that some but not all grievances are statistically associated with protest participation. But are all four economic and political grievances jointly associated with protest participation? To address this question, we conduct a test of the complex hypotheses that involves all the grievance factors set simultaneously equal to zero. According to the Wald test results shown at the bottom of Table 3, the hypothesis that the effects of all the grievance variables simultaneously equal to zero can be rejected at the .05 level of statistical significance for Algeria and Morocco. For Yemen, the joint hypothesis is rejected at the .10 level of significance. However, we cannot reject the hypothesis for Jordan, which suggests that broad economic and political grievances are not associated with student protests in Jordan. In short, we find that a combination of the four economic and political grievances is associated with student protest participation in Algeria, Morocco, and Yemen but not in Jordan.

Regarding the control variables, there is no evidence of a gender gap in protest participation in Algeria, Jordan, and Morocco; in Yemen, however, female students are less likely to protest, holding other factors constant. The lack of gender difference is consistent with emerging literature on the significant advances in women's roles in the public sphere (Inglehart, 2003). There is also no statistical difference in the protest participation rates of secondary and higher education students, holding other characteristics constant. This suggests that secondary students develop political views and behaviors prior to enrolling in higher education. As future research, it is worth investigating the development of politicization in secondary schools in the four Arab states.

Although not included in this article, we conducted a series of regressions to assess the robustness of our findings. For example, we collapsed students who signed petitions and those who marched in one group, such that *PROTEST*=0 if a student did not protest and *PROTEST*=1 if a student either signed a petition, or marched, or both. The findings from the resulting binomial regression models are consistent with the ordered probit regression results presented in this article.

DISCUSSION

These results suggest the need for additional research. We encourage scholars to assess our findings using future rounds of the *Arab Barometer*. Methodologically, there is broad scope for quantitative, qualitative, and case study research that address the effects of both educational institutions and broader economic and political grievances on Arab student protest participation.

We also encourage the adoption of alternative conceptual frameworks for understanding student protest in Arab states. Scholars have often used social movement theoretical frameworks to analyze student protest. The bulk of the literature on social movements examines the emergence and maintenance of movements from two primary perspectives: resource mobilization and political process. Resource mobilization approaches to social movement analysis focus primarily on the role of access to resources in movement emergence. Scholars in this area are interested in understanding the ways in which groups utilize available resources—often by leveraging contacts with elite groups—and they argue that resources are the key component in movement success and maintenance (Jenkins & Parrow, 1977; McCarthy & Zald, 1977, 2002). In contrast, the political process model, pioneered by Charles Tilly and Doug McAdam, argues that the emergence and maintenance of social movements (such as protests) depends on access to resources and the appropriate political and social contexts (McAdam & Tarrow, 2011; Meyer, 2004; Tilly & Wood, 2009). Accordingly, a social movement conceptual framework would focus on the macrolevel processes and organizations involved in student protests rather than on the microlevel individual determinants that we investigate in this article.[8]

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[8] A number of different approaches to the analysis of social movements have developed out of these two perspectives. Some scholars examine the role of culture in social movements (Polletta, 2008; Rochon, 1998; Zhao, 2010), granting more agency to cultural contexts in movement emergence and maintenance. Social-psychological perspectives examine group behavior, emotional manipulation, and collective identity in movements (Hirsch, 1990; Jasper, 2011; Klandermans, 2005; Melucci, 1995; Snow & Oliver, 1995). Others study the role of structural determinants in movement mobilization

Educational stratification theory is another alternative conceptual framework for future research on student protests in Arab states. With roots in the classical Marxist thesis on working-class participation in revolutionary social movements, the conflict tradition of educational stratification emphasizes an adversarial relationship between classes, where upper classes strive to preserve their privilege. Termed "opportunity hoarding" (Wright, 2008), exclusionary practices on the part of upper classes manipulate the value of human capital by restricting lower class access to education. Wright emphasized the relationship between "the advantages of one group and the disadvantages of another," as opposed to the mobilizing power of human capital at the individual level (p. 339). Because university students from richer and financially stable families attend prestigious educational institutions with higher quality education and better social networks and go on to enjoy high status in society (Apple, 1978; Bourdieu, 1973), students from richer families do not want to disrupt the status quo by protesting against the regime. In contrast, students from poorer families tend to attend lesser quality educational institutions and are relegated to low social status after graduation; thus, low-status students are dissatisfied and more likely to protest. An inquiry focused on educational stratification conceptual framework would require data on the quality and reputation of the educational institutions attended by student respondents to the *Arab Barometer*.

CONCLUSION

Using data from the 2006–07 *Arab Barometer*, we analyzed student protest participation between 2003–07 in Algeria, Jordan, Morocco, and Yemen. We found protests were common during the years preceding the Arab Spring and that the riskier form of protesting (marching in a demonstration) was approximately 1.5 to 2 times as common as the less risky form of protest (signing a petition), despite the dangers of voicing dissent in authoritarian regimes.

We proposed grievance explanations of why students protested. In particular, we hypothesized that student protest is determined by attitudes on the performance of the economy, personal family economic status, political exclusion, and preference for democracy. Using an ordered probit model, we found that student protest participation is statistically associated with grievances about the economy (Algeria and Morocco) and lack of democracy (Algeria only). In joint hypothesis tests, however, we detected support for the four grievance-based explanations for Algeria, Morocco, and Yemen but not for Jordan.

There are two main conclusions to be drawn from our study. First, different motivations for student protest are dominant in different countries. Scholars, particularly those who do comparative statistical studies, tend to look for a single explanation that holds across multiple countries, but our empirical analysis indicates that a more nuanced understanding of student political behavior might be appropriate. The second conclusion, based on the lack of statistical evidence on individual hypotheses, is that broader economic and political factors may have had a limited effect on student protests during the 2003–07 period in Algeria, Morocco, Yemen, and especially Jordan. It is possible, however, that student grievances increased during the Arab

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and continuation; for example, organizations (Ganz, 2000; McAdam, 1983), networks (Diani, 2004; Snow, Zurcher, & Ekland-Olson, 1980), coalitions (Staggenborg, 1986; von Bülow, 2011), or repression (Alimi, 2009; Almeida, 2003).

Spring as the larger population of nonstudents organized mass protests that expressed economic and political grievances.

AUTHOR BIOS

M. Najeeb Shafiq is an Associate Professor of Education, Economics and International Affairs at the University of Pittsburgh. He uses large data and advanced quantitative methods to explore the social benefits of education, labor market outcomes, and educational reform. He received his Ph.D. in economics and education from Columbia University, and previously held appointments at the World Bank and Indiana University at Bloomington.

Jessica Mason is a doctoral student in the School of Education, University of Pittsburgh. Her research interests include educational stratification, student political behavior, and higher education in South Asia. She was a recipient of the U.S. Department of State Critical Language Scholarship for Hindi in 2011 and 2012. She received her M.A. in international education from New York University and her B.A. in Spanish and sociology from Boston University.

Taylor Seybolt is an Assistant Professor of International Affairs at the Graduate School of Public and International Affairs, University of Pittsburgh, and he was the Director of the Ford Institute for Human Security at the University of Pittsburgh, 2009–2011. He is currently conducting research on the processes of conflict escalation and on the theory and practice of protecting civilians in violent conflicts. He is the co-editor of Counting Civilian Casualties: an Introduction to Recording and Estimating Nonmilitary Deaths in Conflict (Oxford, 2013). He received his Ph.D. in political science from MIT.

Kristin DeLuca is a doctoral student in the Department of Administrative and Policy Studies in the School of Education, University of Pittsburgh. Her research interests include single-sex education, student political behavior, and gender differences in college student development. She works in the University Honors College as an academic advisor and oversees the living learning communities. Kristin received her M.A. in higher education management from the University of Pittsburgh and her B.A. in political science and communication from Chatham College.

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